DAY 1 – MONDAY, JUNE 6

7:30-8:30
Registration

OPENING & AWARDS CEREMONY

Monday, June 6 **8:30-8:50**	**Zeus**

Welcome Adresses
Manolis Papadrakakis
Ekkehard Ramm
Wing Kam Liu

Monday, June 6 **8:50-9:15**	**Zeus**

Presentation of ECCOMAS Awards
ECCOMAS PhD Awards
Jacques Louis Lions Award
Olgierd Cecil Zienkiewicz Award
Ludwig Prandtl Medal
Leonhard Euler Medal
Ritz-Galerkin Medal

OPENING PLENARY LECTURE

Monday, June 6 **9:15-10:00**	**Zeus**

Chair: Ekkehard Ramm

12327 HELLENISTIC TECHNOLOGY AND THE STEAM-POWERED FORCE-PUMP
Theodosios P. Tasios

10:00-10:30
Coffee Break

PLENARY LECTURES

Monday, June 6 **10:30-12:00**	**Zeus**

Chair: Antonio Huerta

12726 MODELING OF FIBER-REINFORCED SOLIDS WITH APPLICATION TO SOFT TISSUES
Gerhard A. Holzapfel

12169 REDUCED ORDER MODELS FOR ANALYSIS AND SYNTHESIS OF COMPLEX SYSTEMS
Alfio Quarteroni

12:00-14:00
Lunch Break

TECHNICAL SESSIONS

Monday, June 6 **Zeus East**
14:00-16:00

CS 990 - 1: PARTICLE-BASED METHODS
Chair: Miquel Santasusana

5352 AN ALE PARTICLE METHOD USING UPWIND INTERPOLATION FOR SOLVING FLOWS WITH MOVING BOUNDARY AND FREE SURFACE
***Fangyuan Hu**, Seiichi Koshizuka*

8518 DNS SIMULATION AS A TOOL FOR STUDYING LIQUID BRIDGES
***Nikoletta Patsaki**, Johannes Khinast, Robert Scharler*

8868 SIMULATION OF BLUFF-BODY FLOWS USING ITERATIVE PENALIZATION IN A MULTIRESOLUTION PARTICLE-MESH VORTEX METHOD
***Henrik Juul Spietz**, Mads Mølholm Hejlesen, Jens Honoré Walther*

7080 STUDY OF PARTICLES BACKFLOW IN PARTIALLY FILLED SCREW CONVEYORS
***Luca Orefice**, Johannes Khinast*

10124 A STABILISED TOTAL LAGRANGIAN CORRECTED SMOOTH PARTICLE HYDRODYNAMICS TECHNIQUE IN LARGE STRAIN EXPLICIT FAST SOLID DYNAMICS
***Giorgio Greto**, Sivakumar Kulasegaram, Chun H. Lee, Antonio J. Gil, Javier Bonet*

8928 GRADIENT ELASTICITY WITH THE MATERIAL POINT METHOD
***T.J. Charlton**, W.M. Coombs, C.E. Augarde*

Monday, June 6 **Zeus West**
14:00-16:00

MS 609 - 1: ADVANCED COMPUTATIONAL MODELING OF BATTERIES AND FUEL CELLS
MS Organizers: Edwin Knobbe, Wolfgang A. Wall
Chair: Edwin Knobbe

9290 **KEYNOTE:** MODELING DIFFUSION INDUCED FRACTURE IN SILICON ELECTRODES THROUGH A PHASE FIELD APPROACH
***Christian Linder**, Xiaoxuan Zhang*

9915 PHASE-fiELD STUDY OF ELECTROCHEMICAL REACTIONS AT EXTERIOR SURFACE, CRACK SURFACES AND PHASE INTERFACES IN LI-ION BATTERY ELECTRODE PARTICLES
***Bai-Xiang Xu**, Ying Zhao, Peter Stein*

8172 STOCHASTIC 3D MODELING OF AMORPHOUS MICROSTRUCTURES - A POWERFUL TOOL FOR VIRTUAL MATERIALS TESTING
*Matthias Neumann, **Volker Schmidt***

7302 CONSISTENT MODELING AND NUMERICAL SIMULATION OF SPACE-CHARGE LAYER FORMATION IN ALL-SOLID-STATE THIN-FILM CELLS
***Katharina Becker-Steinberger**, Stefanie Braun, Simon Schardt, Arnulf Latz*

6857 ELECTROCHEMICAL POTENTIAL ANALYSIS OF SOLID OXIDE FUEL CELL BASED ON REACTION-DIFFUSION EQUATIONS CONSIDERING PHASE TRANSFORMATION OF ZIRCONIUM OXIDE
***Mayu Muramatsu**, Haruo Kishimoto, Katsuhiro Yamaji, Keiji Yashiro, Tatsuya Kawada, Kenjiro Terada, Harumi Yokokawa*

Monday, June 6 **Zeus North**
14:00-16:00

MS 906 - 1: MATHEMATICAL ADVANCES IN ISOGEOMETRIC ANALYSIS
MS Organizers: Annalisa Buffa, John A. Evans, Thomas J.R. Hughes, Giancarlo Sangalli
Chair: Giancarlo Sangalli

8500 **KEYNOTE:** ROBUST PRECONDITIONERS FOR OPTIMALITY SYSTEMS USING ISOGEOMETRIC ANALYSIS
*Jarle Sogn, **Walter Zulehner***

5647 MULTIGRID METHODS FOR ISOGEOMETRIC ANALYSIS
*Clemens Hofreither, **Stefan Takacs**, Walter Zulehner*

10319 THE GLT CLASS AS A GENERALIZED FOURIER ANALYSIS AND APPLICATIONS
Stefano Serra Capizzano

9226 PRECONDITIONERS FOR ISOGEOMETRIC ANALYSIS BASED ON SOLVERS FOR SYLVESTER EQUATION
*Giancarlo Sangalli, **Mattia Tani***

9991 SCALABLE ISOGEOMETRIC DOMAIN DECOMPOSITION PRECONDITIONERS FOR MIXED ELASTICITY AND STOKES SYSTEMS
*Lourenco Beirao da Veiga, **Luca F. Pavarino**, Simone Scacchi, Stefano Zampini*

Monday, June 6 **Minos East**
14:00-16:00

MS 501 - 1: ALGORITHMIC ASPECTS OF HIGH-PERFORMANCE COMPUTING FOR MECHANICS AND PHYSICS
MS Organizers: Santiago Badia, Victor Calo, Javier Principe
Chair: Santiago Badia

10863 **KEYNOTE:** COMPUTATIONAL SCREENING TOOLS FOR MODELING ENERGY PROBLEMS IN POROUS MEDIA
Mary Wheeler

6715 COMPUTATIONAL COMPLEXITY OF ISOGEOMETRIC FEM WITH T-SPLINES AND B-SPLINES OVER 2D H-REFINED GRIDS
*Pawel Lipski, **Bartosz Janota**, Maciej Paszynski, Victor Calo*

8168 EFFICIENT SOLUTION OF LARGE SCALE MULTI-STAGE OPTIMAL POWER FLOW PROBLEMS USING INTERIOR POINT METHODS
***Drosos Kourounis**, Alexander Fuchs, Olaf Schenk*

8294 EFFICIENT SOLUTION METHODS FOR ELECTROMAGNETICS AND MULTIFLUID PLASMA MODELS
***Edward Phillips**, John Shadid, Eric Cyr*

5028 ON THE USE OF LOW RANK APPROXIMATIONS FOR THE CONSTRUCTION OF EFFICIENT PRECONDITIONERS
***Paolo Gatto**, Jan Hesthaven*

Monday, June 6 **Minos North**
14:00-16:00

MS 1101 - 1: REDUCED BASIS, POD AND PGD MODEL ORDER REDUCTION TECHNIQUES

MS Organizers: Francisco Chinesta, Elias Cueto, Antonio Huerta, Pierre Ladeveze, Gianluigi Rozza

Chair: Pierre Ladeveze

9495 **KEYNOTE:** AN EXTENDED PGD-REDUCED MODEL APPROACH IN SOLID MECHANICS FOR LARGE NUMBER OF PARAMETERS
***Pierre Ladeveze**, David Neron, Charles Paillet*

6258 REDUCED BASIS METHOD FOR FAST PARETO SOLUTIONS IN MULTIOBJECTIVE OPTIMIZATION
***Laura Iapichino,** Stefan Volkwein, Stefan Trenz*

5895 WAVELETS WITHIN THE REDUCED BASIS METHODS?
Karsten Urban

8234 THE PROPER GENERALIZED DECOMPOSITION APPLIED TO THE NUMERICAL SIMULATION OF ELASTOPLASTIC PROBLEMS
***Jean-Christophe Roux**, Sylvain Zuchiatti, Eric Feulvarch, Samuel Tissot, Gilles Perrin, Jean-Michel Bergheau*

8193 EIGENVALUE REDUCED BASIS APPROXIMATION FOR COMPLEX SOLID STRUCTURES
***Thomas Horger**, Barbara Wohlmuth*

Monday, June 6 **Minos South**
14:00-16:00

MS 503 - 1: HPC-BASED SIMULATIONS FOR THE ENGINEERING REALM AND INDUSTRIAL APPLICATIONS

MS Organizers: Makoto Tsubokura, Mariano Vázquez, Takayuki Aoki

Chair: Makoto Tsubokura

6885 LARGE-EDDY SIMULATION OF COAL GASIFICATION ON A TWO-STAGE ENTRAINED FLOW COAL GASIFIER
***Hiroaki Watanabe**, Kenji Tanno, Ryoichi Kurose*

10082 TOWARDS HIGHLY SCALABLE UNCERTAINTY QUANTIFICATION FOR CHALLENGING BIOMEDICAL APPLICATIONS ON GPU CLUSTERS
Peter Zaspel

8231 SIMULATION OF COMPRESSIBLE FLOW OVER RECTANGULAR CAVITIES USING THE FLUX RECONSTRUCTION APPROACH
***Arvind Iyer**, Peter Vincent*

5067 EFFICIENT PARALLEL GEOMETRY DISTRIBUTION FOR THE SIMULATION OF COMPLEX FLOWS
Andreas Lintermann

8019 A LARGE-SCALE FREE-SURFACE FLOW SIMULATION USING LATTICE BOLTZMANN METHOD ON MULTI-GPU CLUSTERS.
***Naoyuki Onodera**, Kunihide Ohashi*

9402 CONTROL OF AERODYNAMIC NOISE BY USING IMPINGING JETS PLACED AT UPSTREAM OF THE CAVITY
*Ryo Adachi, Taiki Minato, **Hiroshi Yokoyama**, Akiyoshi Iida*

Monday, June 6 **Danae**
14:00-16:00

MS 304: COMPUTATIONAL MODELLING OF ADDITIVE PRODUCTION PROCESSES

MS Organizers: Dirk Hartmann, Stefan Kollmannsberger, Ernst Rank, Utz Wever

Chair: Dirk Hartmann

9881 INTERACTIVE TOPOLOGY OPTIMIZATION
*Hans-Joachim Bungartz, Stefan Gavranovic, **Dirk Hartmann**, Utz Wever*

8226 A HIGH-ORDER ACCURATE COMPUTATIONAL FRAMEWORK FOR THE SIMULATION OF SLM PROCESSES
***Stefan Kollmannsberger**, Ali Özcan, Massimo Carraturo, Nils Zander, Ernst Rank*

12047 NUMERICAL MODEL FOR THERMAL ANALYSIS OF LASER BASED ADDITIVE MANUFACTURING PROCESSES
***Arnaud Francois**, Eric Wyart*

4477 SIMULATION OF TEMPERATURE DISTRIBUTION AND MECHANICAL MATERIAL BEHAVIOUR IN SELECTIVE BEAM MELTING PROCESSES
***Daniel Riedlbauer**, Paul Steinmann, Julia Mergheim*

8641 A MULTI-SCALE APPROACH FOR EFFICIENT SIMULATION OF SELECTIVE LASER MELTING
***Luke Parry**, Ian Ashcroft, Ricky Wildman*

10184 VALIDATION OF MODELLING ASSUMPTIONS FOR THE BUILDUP SIMULATION OF LASER BEAM MELTING ON THE BASIS OF THE RESIDUAL STRESS DISTRIBUTION
***Fabian Bayerlein**, Christian Zeller, Martin Wunderer, Johannes Weirather, Michael F. Zäh, Markus Schmid, Georg Schlick, Roland Hessert, Michael Hofmann, Thomas Uihlein*

Monday, June 6 **Europa**
14:00-16:00

MS 914 -1: INNOVATIVE NON-BOUNDARY-FITTED DISCRETIZATION METHODS

MS Organizers: Fehmi Cirak, John E. Dolbow, Isaac Harari, Ming-Chen Hsu, Thomas J.R. Hughes, Dominik Schillinger

Chair: Dominik Schillinger

5105 **KEYNOTE:** EMBEDDED BOUNDARY METHODS FOR PLATE BENDING PROBLEMS
Isaac Harari

7504 EMBEDDED SOLIDS OF ANY DIMENSION IN THE X-FEM DEFINED ON HIGHER-ORDER APPROXIMATIONS
***Frédéric Duboeuf**, Eric Béchet*

7203 TOWARDS MASSIVELY PARALLEL HIGHER-ORDER IMMERSED DOMAIN FINITE ELEMENT ANALYSIS
***Vasco Varduhn**, Dominik Schillinger*

7127 ON IMMERSED AND PHASE-FIELD TECHNIQUES
Christian Hesch

Monday, June 6 **Leda**
14:00-16:00

MS 1005: MONITORING AND CONTROL OF STRUCTURES
MS Organizers: Resat Oyguc
Chair: Marcello Vanali

9244 DESIGN AND INSTALLATION OF A PERMANENT MONITORING SYSTEM FOR PALAZZO LOMBARDIA IN MILANO, ITALY
Marta Berardengo, Alfredo Cigada, Stefano Manzoni, ***Marcello Vanali***

8822 UNIFIED PROGNOSTICS AND REAL-TIME CONTROL IN STRUCTURAL DYNAMICS UNDER UNCERTAINTY
Abhishek Kundu*, Pierre Kerfriden*

11882 CHARACTERISING THE DYNAMIC RESPONSE OF A DEFORMED MASONRY ARCH RAIL BRIDGE USING MONITORING AND REMOTE SENSING
Sinan Acikgoz*, Hesham Aldaikh, Matthew DeJong, Cedric Kechavarzi, Kenichi Soga*

4439 SHAPE IDENTIFICATION ANALYSIS OF CAVITY IN RESIN STRUCTURE BASED ON THERMAL NONDESTRUCTIVE TESTING METHOD
Kotaro Maruoka*, Takahiko Kurahashi, Tetsuro Iyama*

5880 SELECTED PROBLEMS OF DAMAGE DETECTION IN INTERNALLY SUPPORTED PLATES USING DISCRETE WAVELET TRANSFORM
Michal Guminiak, ***Anna Knitter-Piatkowska***

Monday, June 6 **Artemis**
14:00-16:00

MS 903 - 1: ADVANCES IN FICTITIOUS DOMAIN METHODS FOR SOLID MECHANICS
MS Organizers: Alexander Düster, Ernst Rank, Stefan Kollmannsberger, Andreas Schröder
Chair: Ernst Rank

8116 **KEYNOTE:** THE FINITE CELL METHOD: SOME RECENT ADVANCES AND APPLICATIONS TO SOLID MECHANICS
Alexander Düster*, Meysam Joulaian, Stephan Heinze, Simeon Hubrich, Aliakbar Taghipour, Jamshid Parvizian*

9068 SIMULATION OF LAMB WAVE PROPAGATION USING THE B-SPLINE VERSION OF THE FINITE CELL METHOD
Yaser Mirbagheri, ***Jamshid Parvizian****, Hassan Nahvi, Alexander Düster*

7904 AN EXTENSION OF THE FINITE CELL METHOD USING BOOLEAN OPERATIONS
Alireza Abedian*, Alexander Düster*

7595 SMART OCTREES: NUMERICAL QUADRATURE FOR IMMERSED BOUNDARY METHODS IN THREE DIMENSIONS
László Kudela*, Nils Zander, Stefan Kollmannsberger, Ernst Rank*

4572 HIGH ORDER UNFITTED FEM ON LEVEL SET DOMAINS USING ISOPARAMETRIC MAPPINGS
Christoph Lehrenfeld

Monday, June 6 **Athena**
14:00-16:00

MS 302 - 1: MESH GENERATION AND ADAPTION
MS Organizers: Josep Sarrate, Xevi Roca, Rafael Montenegro, Eloi Ruiz
Chair: Josep Sarrate

11948 A MESH GENERATION METHOD FOR HISTORICAL MONUMENTAL BUILDINGS: AN INNOVATIVE APPROACH
Giovanni Castellazzi*, Antonio Maria D'Altri, Stefano de Miranda, Francesco Ubertini, Gabriele Bitelli, Alessandro Lambertini, Ilenia Selvaggi, Antonio Michele Tralli*

7554 A SEMI-UNSTRUCTURED TURBOMACHINERY MESHING LIBRARY WITH FOCUS ON MODELING OF SPECIFIC GEOMETRICAL FEATURES
Marco Stelldinger*, Thomas Giersch, Felix Figaschewsky, Arnold Kühhorn*

7705 MESH GENERATION FOR WIND FARM DESIGN
Abel Gargallo-Peiró*, Matias Avila, Herbert Owen, Luis Prieto, Arnau Folch*

7417 A SIMPLE CHECK FOR DETERMINING THE MINIMUM NUMBER OF SINGULARITIES REQUIRED IN A QUAD MESH ON A SURFACE
Harold J Fogg, ***Liang Sun****, Cecil G Armstrong, Christopher M Tierney, Trevor T Robinson*

7536 INSERTION OF ANTHROPOGENIC CONSTRUCTIONS IN A TETRAHEDRAL MESH OF THE TERRAIN USING THE MECCANO METHOD
Guillermo Valentín Socorro-Marrero*, Albert Oliver, Eduardo Rodríguez, José M. Escobar, Gustavo Montero, Rafael Montenegro*

Monday, June 6 **Aphrodite**
14:00-16:00

MS 921 - 1: RECENT ADVANCES IN BOUNDARY ELEMENT METHODS
MS Organizers: Gernot Beer, Luiz Wrobel, Martin Schan
Chair: Gernot Beer

4408 **KEYNOTE:** ADVANCES IN THE BOUNDARY ELEMENT METHOD IN GEOMECHANICS
Gernot Beer

6120 MODELLING THE PROCESS OF SEQUENTIAL EXCAVATION WITH THE BOUNDARY ELEMENT METHOD
Christian Duenser*, Gernot Beer*

7809 QUADTREE SCHEME FOR THREE DIMENSIONAL BOUNDARY ELEMENT MESH GENERATION
John Watson

9199 3D SOUND PROPAGATION AROUND BARRIERS WITH SPECIFIED ABSORPTION IN THE VICINITY OF REFLECTING PLANES
Julieta Antonio*, Antonio Tadeu*

8000 A SCALED BOUNDARY FINITE ELEMENT METHOD FOR VISCOELASTIC PROBLEMS WITH CYCLICALLY SYMMETRIC STRUCTURES
Yiqian He*, Chongshuai Wang, Haitian Yang*

Monday, June 6 **Antigoni**
14:00-16:00

MS 1306 -1: ERCOFTAC SIG-45: UNCERTAINTY QUANTIFICATION IN CFD AND FLUID STRUCTURE INTERACTION

MS Organizers: Didier Lucor, Sunetra Sarkar
Chair: Sunetra Sarkar

9850 A STOCHASTIC RECONSTRUCTION TECHNIQUE FOR THE OUTPUT VELOCITY FIELD OF A 'DEBYE TYPE' POROUS MEDIA
Santhosh Jude Illango, A Sameen, ***Sunetra Sarkar***

7741 A MULTI-FIDELITY ADAPTIVE SAMPLING METHOD FOR METAMODEL-BASED UNCERTAINTY QUANTIFICATION OF COMPUTER SIMULATIONS
Riccardo Pellegrini, ***Cecilia Leotardi****, Umberto Iemma, Emilio Campana, Matteo Diez*

9160 A LEAST-SQUARES, ADAPTIVE UNCERTAINTY PROPAGATION APPROACH FOR A PLASMA-COUPLED COMBUSTION SYSTEM
Kunkun Tang*, Luca Massa, Jonathan Wang, Jonathan Freund*

8576 UNCERTAINTY QUANTIFICATION IN PATIENT-SPECIFIC FINITE ELEMENT SIMULATION OF BLOOD FLOW IN THE LEFT VENTRICLE OF THE HUMAN HEART
Jeannette Spühler*, David Larsson, Massimiliano Colarieti-Tosti, Matilda Larsson, Johan Hoffman*

7769 AN EFFICIENT APPROACH FOR MULTI-OBJECTIVE ROBUST DESIGN
Lisa Kusch*, Nicolas R. Gauger*

Monday, June 6 **Apollo East**
14:00-16:00

MS 303 - 1 : CURVED MESH GENERATION FOR HIGH-ORDER METHODS

MS Organizers: Xevi Roca, Josep Sarrate
Chair: Xevi Roca

10925 A CONSISTENTLY LINEARISED SOLID MECHANICS BASED MESH DEFORMATION TECHNIQUE FOR HIGH ORDER CURVED ELEMENTS
Roman Poya*, Ruben Sevilla, Antonio Gil*

6539 EFFICIENT COMPUTATION OF THE EXTREMA OF ALGEBRAIC QUALITY MEASURES FOR CURVILINEAR FINITE ELEMENTS
Amaury Johnen*, Christophe Geuzaine, Jean-François Remacle*

8410 AUTOMATIC GENERATION OF 3D UNSTRUCTURED HIGH-ORDER CURVILINEAR MESHE
Michael Turner*, David Moxey, Spencer J.Sherwin, Joaquim Peiro*

7163 CHECKING AND IMPROVING THE GEOMETRIC ACCURACY OF NON-INTERPOLATING CURVED HIGH-ORDER MESHES
Eloi Ruiz-Gironés, Jose Sarrate, ***Xevi Roca***

10030 MESH GENERATION FOR THE 2D NURBS-ENHANCED FINITE ELEMENT METHOD
Ruben Sevilla*, Luke Rees, Oubay Hassan*

Monday, June 6 **Apollo West**
14:00-16:00

MS 1104 - 1: REDUCED-ORDER MODELS FOR PDE-CONSTRAINED OPTIMIZATION AND INVERSE PROBLEMS

MS Organizers: Alfio Quarteroni, Andrea Manzoni
Chair: Andrea Manzoni

5892 REDUCED BASIS METHODS FOR CATALYST CONVERTERS
Karsten Urban

10587 MONGE-KANTOROVICH INTERPOLATION FOR PDE CONSTRAINED OPTIMIZATION
Michel Bergmann, ***Angelo Iollo****, Haysam Telib*

8839 MODEL ORDER REDUCTION STRATEGIES FOR THE SIMULATION AND OPTIMIZATION OF PHYSIOLOGICAL FLOWS
Federico Negri*, Andrea Manzoni, Alfio Quarteroni*

8242 A REDUCED-ORDER STRATEGY FOR EFFICIENT STATE/PARAMETER IDENTIFICATION IN CARDIAC ELECTROPHYSIOLOGY
Stefano Pagani*, Andrea Manzoni, Alfio Quarteroni*

Monday, June 6 **Room 1**
14:00-16:00

MS 1307 - 1: NON-INTRUSIVE SURROGATE MODELS FOR UNCERTAINTY QUANTIFICATION IN HIGH DIMENSIONS

MS Organizers: Bruno Sudret, Eleni Chatzi, Jean-Marc Bourinet, Nicolas Gayton
Chair: Vasilis Dertimanis

5428 EFFICIENT GLOBAL SENSITIVITY ANALYSIS OF HIGH-DIMENSIONAL MODELS USING LOW-RANK TENSOR APPROXIMATIONS
Katerina Konakli*, Bruno Sudret*

4576 ASSESSMENT OF THE QUALITY OF SENSITIVITY INDICES BASED ON METAMODELS
Maria Steiner*, Reza Khosravian, Tom Lahmer*

6802 POLYNOMIAL CHAOS EXPANSIONS FOR MODELING THE FREQUENCY RESPONSE FUNCTIONS OF STOCHASTIC DYNAMICAL SYSTEM
Vahid Yaghoubi*, Stefano Marelli, Bruno Sudret, Thomas Abrahamsson*

7412 A STATISTICAL APPROACH FOR BUILDING SPARSE POLYNOMIAL CHAOS EXPANSIONS
Simon Abraham*, Ghader Ghorbaniasl, Chris Lacor*

5821 OPTIMIZATION OF A PHOTOACOUSTIC GAS SENSOR USING MULTIFIDELITY RBF METAMODELING
Cedric Durantin*, Justin Rouxel, Jean-Antoine Desideri, Alain Gliere*

Monday, June 6 **Room 2**
14:00-16:00

CS 420 - 1: MULTI-PHASE AND CHEMICALLY REACTING FLOWS
Chair: Roozbeh Mousavi

9241 LEVEL SET METHOD FOR SIMULATING THE INTERFACE KINEMATICS: APPLICATION OF A DISCONTINUOUS GALERKIN METHOD
***Roozbeh Mousavi**, Florian Kummer, Martin Oberlack, Peter F. Pelz*

5482 MODELLING OF COMBUSTION AND POLLUTANT FORMATION IN A LARGE, TWO-STROKE MARINE DIESEL ENGINE USING INTEGRATED CFD-SKELETAL CHEMICAL MECHANISM
***Kar Mun Pang**, Nikolas Karvounis, Jesper Schramm, Jens Walther*

9960 MOMENT-OF-FLUID ANALYTIC RECONSTRUCTION ON CARTESIAN GRIDS
Antoine Lemoine

11006 NUMERICAL SIMULATION OF HYDROGEN JET INJECTION AND IGNITION IN SUPERSONIC FLOW
***Yulia Zakharova**, Natalya Fedorova, Svetlana Valger, Marat Goldfeld, Olga Vankova*

8733 NUMERICAL INVESTIGATION OF METASTABLE CONDENSING FLOWS WITH AN IMPLICIT UPWIND METHOD
***Lucia Azzini**, Teus Van der Stelt, Matteo Pini*

6184 CFD-XDEM FOR PREDICTING MULTIPHASE FLOW BEHAVIOR THROUGH POROUS MEDIA
***Maryam Baniasadi**, Bernhard Peters*

Monday, June 6 **Room 3**
14:00-16:00

MS 308: ADVANCES IN RAPID CAX
MS Organizers: Michael Breitenberger
Chair: Michael Breitenberger

10696 ADVANCES IN EMBEDDED SOLVERS - TOWARDS THE INTEGRATION WITH CADS
***Riccardo Rossi**, Abel Coll, Pooyan Dadvand, Roland Wuechner, Andreas Apostolatos, Dimitrios Iliopoulos*

10419 COUPLING NON-CONFORMING NURBS PATCHES IN ISOGEOMETRIC ANALYSIS USING VIRTUAL REFINEMENT AND A MASTER-SLAVE FORMULATION
***Laurens Coox**, Francesco Greco, Onur Atak, Dirk Vandepitte, Wim Desmet*

10090 ROBUST MESHING OF LARGE SCALE NON-WATERTIGHT GEOMETRIES
***Abel Coll**, Pooyan Dadvand*

10616 NON-MATCHING GRID TREATMENT FOR CAD-BASED SHELL AND MEMBRANE ANALYSIS IN COMPUTATIONAL FSI
***Roland Wüchner**, Andreas Apostolatos, Michael Breitenberger, Riccardo Rossi, Kai-Uwe Bletzinger*

7581 MAIN CHALLENGES FOR PERFORMING STRUCTURAL SHELL ANALYSIS DIRECTLY ON CAD MODELS
***Michael Breitenberger**, Roland Wüchner, Kai-Uwe Bletzinger*

Monday, June 6 **Room 4**
14:00-16:20

CS 210: NUMERICAL SIMULATION OF COMPOSITE MATERIALS
Chair: Sami Holopainen

11047 EVOLUTION EQUATIONS BASED APPROACH FOR MODELING FATIGUE IN AMORPHOUS GLASSY POLYMERS. ON THE INVESTIGATION OF DAMAGE MECHANISMS IN POLYCARBONATE.
Sami Holopainen

7468 A LEVEL SET MODEL FOR THE NUMERICAL MODELING OF COMPOSITES DELAMINATION: APPLICATION TO MULTI-FRONT PROBLEMS
***Elia Picault**, Patrick Rozycki*

7796 A FAILURE CRITERIA FOR UNIDIRECTIONAL FIBER REINFORCED COMPOSITES BASED ON MICROMECHANICS BY ASYMPTOTIC HOMOGENIZATION
Rafael Quelho de Macedo, José Miranda Guedes, ***Rafael Thiago Luiz Ferreira**, Maurício Vicente Donadon*

7509 INVESTIGATIONS ON AN INNOVATIVE METAL-THERMOPLASTIC COMPOSITE ASSEMBLY
***Simon Paroissien**, Patrick Rozycki, Thierry Renault*

7489 MICROSTRUCTURAL ANALYSIS USING X-RAY COMPUTED TOMOGRAPHY (CT)
***Malika Kersani**, Stepan Lomov, Aartwillem Van Vuure, Ahcène Bouabdallah, Ignass Verpoest*

11190 SMOOTH CRACK PROPAGATION FOR STATIC AND DYNAMIC CRACK PROPAGATION
***Chris Pearce**, Lukasz Kaczmarczyk*

10881 MULTIPLE FRACTURE GROWTH USING STRESS INTENSITY FACTOR CRITERIA EVALUATED ON UNSTRUCTURED TETRAHEDRAL MESHES IN THREE DIMENSIONS
***Adriana Paluszny**, Robert W Zimmerman*

Monday, June 6 **Room 5**
14:00-16:00

CS 840 - 1: MULTI-SCALE COMPUTATIONAL METHODS FOR SOLIDS AND FLUIDS
Chair: Anna Kucaba-Pietal

12141 SCALE EFFECT IN MICROFLOWS MODELLING WITH MICROPOLAR FLUID THEORY
Anna Kucaba-Pietal

7984 SPATIAL CLUSTERING STRATEGIES FOR HIERARCHICAL MULTI-SCALE MODELLING OF METAL PLASTICITY
***Md Khairullah**, Jerzy Gawad, Dirk Roose, Albert van Bael*

5898 ON THE INFLUENCE OF DIFFERENT MAPPING TECHNIQUES FOR A MULTISCALE APPROACH TO TURBULENT THREE-PHASE FLOWS
***Gabriele Pozzetti**, Bernhard Peters*

10906 BLACK-BOX SOLVER FOR QUASI ONE-DIMENSIONAL MULTISCALE MODELLING USING THE QTT FORMAT
Ivan Oseledets, Maxim Rakhuba, ***Andrei Chertkov***

11785 MULTISCALE SIMULATION OF ACOUSTIC WAVES IN POROUS MEDIA WITH LOW AND HIGH PERMEABILITY CONTRASTS
***Vu-Hieu Nguyen**, Eduard Rohan, Salah Naili*

6694 MODELLING THE THERMOPLASTIC MATERIAL BEHAVIOUR OF DUAL-PHASE STEELS ON A MICROSCOPIC AND MACROSCOPIC LENGTH SCALE
***Sebastian Zeller**, Stefan Loehnert, Peter Wriggers*

Monday, June 6 **Room 7**
14:00-16:00

CS 110 - 1: NUMERICAL MODELS IN BIOMECHANICS
Chair: Amar Oukara

10832 AN INTEGRATED NUMERICAL SIMULATION OF A WING-BODY COMBINATION FOR \TEXTIT{DROSOPHILA} FLIGHT
Mehhmet Sahin, ***Ezgi Dilek****, Belkis Erzincanli*

9621 TIME INTEGRATION SCHEMES COMPARATION FOR PARTICLES TRANSPORT
Edgar Olivares Mañas

7136 ON THE INJURY RISK ASSESSMENT OF NON-LETHAL PROJECTILE HEAD IMPACTS
Amar Oukara*, Nestor Nsiampa, Cyril Robbe, Alexandre Papy*

11729 FINITE-ELEMENT MODEL OF INTRAOCULAR PRESSURE MEASUREMENT BY MAKLAKOV APPLANATION TONOMETER
Dmitry V. Franus

6047 PRELIMINARY STUDY TO INVESTIGATE THE EFFECT OF PISTON-LIKE AND ROCKING MOTIONS OF THE STAPES FOOTPLATE ON THE BASILAR MEMBRANE VIBRATION
Philipp Wahl*, Sebastian Ihrle, Pascal Ziegler, Peter Eberhard*

7355 EXPERIMENTAL STUDY ON THE FUZZY-PID HYBRID CONTROL ALGORITHM FOR UNLOADING SYSTEM IN MECHATRONIC DEVICE FOR GAIT RE-EDUCATION
Slawomir Duda, ***Grzegorz Gembalczyk***

Monday, June 6 **Room 8**
14:00-16:00

MS 1218: STABILITY AND CONTROL OF FLEXIBLE STRUCTURES
MS Organizers: Ilaria Venanzi, Marco Lepidi
Chair: Ilaria Venanzi, Marco Lepidi

7079 EXPLOITING MULTIPLE REFERENCE MODELS FOR ADAPTIVE CONTROL OF FLEXIBLE STRUCTURES
Ilaria Venanzi*, Laura Ierimonti*

7460 PASSIVE CONTROL OF WAVE PROPAGATION IN PERIODIC ANTI-TETRACHIRAL META-MATERIALS
Marco Lepidi*, Andrea Bacigalupo*

8686 FLEXIBLE COMPLEX SYSTEM OF A DOUBLE-STRING UNDER EXTREME MOVING LOADS
Jarosław Rusin

11538 COMPUTATIONAL EFFECTIVENESS OF LMI DESIGN STRATEGIES FOR VIBRATION CONTROL OF LARGE STRUCTURES
Francisco Palacios-Quiñonero, Josep Rubió-Massegú, ***Josep M. Rossell****, Hamid Reza Karimi*

11938 A SMART BASE RESTRAINT FOR WIND TURBINES TO MITIGATE UNDESIRED EFFECTS DUE TO STRUCTURAL VIBRATIONS
Nicola Caterino*, Christos T. Georgakis, Mariacristina Spizzuoco, Antonio Occhiuzzi*

8996 ON THE MODELING OF SELF-DAMPING IN STRANDED CABLES
Francesco Foti, ***Luca Martinelli****, Federico Perotti*

Monday, June 6 **Room 9**
14:00-16:00

CS 750 - 1: COMPUTATIONAL MODELING OF COMPOSITES
Chair: Mikhail Itskov

6784 IMPROVING THE ACCURACY OF NUMERICAL INTEGRATION OVER THE UNIT SPHERE FOR LARGE STRAIN MICROSPHERE (MICROPLANE) MODELS
Mikhail Itskov

14028 STRUCTURAL ANALYSIS OF ADHESIVE BONDING FOR THICK-WALLED TUBULAR COMPOSITE PROFILES
Geminiano Mancusi, ***Agostina Orefice****, Luciano Feo, Fernando Fraternali*

9771 A 3D FINITE ELEMENTS ANALYSIS OF THERMOPLASTIC LAMINATES RVE
Romain Hamonou*, Laurent Gornet, Frédéric Jacquemin, Stéphane Auger*

9780 TIMOSHENKO BEAM ELEMENT WITH ANISOTROPIC CROSS-SECTIONAL PROPERTIES
Alexander R. Stäblein*, Morten H. Hansen*

11293 CONSTITUTIVE MODELLING FOR THE CURING PROCESS IN PARTICLE-FILLED ELECTRO-ACTIVE POLYMERS
Mokarram Hossain

Monday, June 6 **Room 10**
14:00-16:00

MS 505 - 1: INTERACTIVE SIMULATIONS IN COMPUTATIONAL ENGINEERING
MS Organizers: Adrian Harwood, Petra Wenisch
Chair: Adrian Harwood

8200 INTERACTIVE SIMULATION OF INDOOR FLUID USING THE LATTICE BOLTZMANN METHOD
Petra Wenisch*, Dirk Fleckenstein*

12026 INTERACTIVE SIMULATION OF CFD PROBLEMS ON BOARDS
Florian De Vuyst

11789 GPU COMPUTING – A CHANCE FOR COMPUTATIONAL STEERING IN THE CFD DOMAIN
Jan Linxweiler*, Manfred Krafczyk*

11193 GPUS AND LBM: A PERFECT MATCH FOR REAL-TIME SIMULATIONS AND INTERACTIVE MONITORING OF THREE-DIMENSIONAL CFD
Christian Janßen*, Thomas Rung*

10295 INTERACTIVE FLOW SIMULATIONS BASED ON A MASSIVE PARALLEL I/O KERNEL USING HDF5
Christoph Ertl, ***Ralf-Peter Mundani****, Ernst Rank*

Monday, June 6 **Room 11**
14:00-16:00

MS 916 - 1: DIRECT METHODS FOR LIMIT STATES OF MATERIALS AND STRUCTURES

MS Organizers: Konstantinos V. Spiliopoulos, Dieter Weichert
Chair: Eric Charkaluk

10324 **KEYNOTE:** ADVANCES OF THE RSDM TO THE SHAKEDOWN ANALYSIS OF STRUCTURES
Konstantinos Spiliopoulos,*Konstantinos Panagiotou, Ioannis Kapogiannis*

7530 COMPOSITE FEM MODELS FOR LIMIT AND SHAKEDOWN ANALYSIS
Leonardo Leonetti, *Giovanni Garcea, Hung Nguyen-Xuan, ,*

8109 ELASTOPLASTIC DESIGN OF AEROTHERMALLY HEATED AIRCRAFT SURFACES
Natasha Vermaak, *Ismail S. Cinoglu, Jerard V. Gordon*

9528 SHAKEDOWN STATE IN POLYCRYSTALS: A DIRECT NUMERICAL ASSESSMENT
Eric Charkaluk, *Domenico Magisano, Pierre Baudoin, Géry de Saxcé, Andrei Constantinescu*

Monday, June 6 **Room 12**
14:00-16:00

MS 917 - 1: MESOSCOPIC METHODS FOR COMPLEX FLUIDS AND SOFT MATTER

MS Organizers: Zhen Li, Wenxiao Pan, Igor V. Pivkin
Chair: Zhen Li

8887 COARSE-GRAINED PROTEIN MODEL FOR DISSIPATIVE PARTICLE DYNAMICS
Emanuel Peter, Kirill Lykov, ***Igor Pivkin***

8113 ON THE NUMERICAL TREATMENT OF DISSIPATIVE PARTICLE DYNAMICS AND RELATED SYSTEMS: AN ADAPTIVE FORMULATION
Xiaocheng Shang, *Benedict Leimkuhler*

5060 MULTISCALE SIMULATION OF MOLECULAR DYNAMICS AND DISSIPATIVE PARTICLE DYNAMICS VIA THE ADAPTIVE RESOLUTION SCHEME
Xin Bian, *Zhen Li, Yu-Hang Tang, George Em Karniadakis*

4932 BOTTOM-UP CONSTRUCTION OF NON-MARKOVIAN COARSE-GRAINED MODEL FOR POLYMERIC FLUIDS
Zhen Li, *Xin Bian, Xiantao Li, George Karniadakis*

8495 PARTICLE BASED SIMULATION OF FLUID FLOW IN PERIODICALLY GROOVED CHANNELS
Dorothea Kasiteropoulou, *Theodoros Karakasidis, Antonios Liakopoulos*

Monday, June 6 **Room 15**
14:00-16:00

CS 930 - 1: HIGH-ORDER DISCRETIZATION METHODS

Chair: Clinton Groth

9049 A PARALLEL HIGH-ORDER CENO FINITE-VOLUME METHOD FOR LARGE-EDDY SIMULATION OF TURBULENT REACTIVE FLOWS
Clinton Groth, *Luiz Tobaldini Neto*

6203 A COMPARISON OF VARIOUS NODAL DISCONTINUOUS GALERKIN METHODS FOR THE 3D EULER EQUATIONS
Michael Bergmann, *Svetlana Drapkina, Graham Ashcroft, Christian Frey*

8183 MESH ADAPTATION FOR VERY HIGH ORDER FINITE ELEMENTS
Olivier Coulaud, *Frédéric Alauzet, Adrien Loseille*

7557 PERFORMANCE OF A DOMAIN DECOMPOSITION METHOD FOR HIGH-ORDER FEM
Alice Lieu, *Hadrien Bériot, Gwénaël Gabard, François-Xavier Roux*

7830 REQUIREMENTS OF GRID RESOLUTION IN WALL-RESOLVED LES USING HIGH-ORDER DG-CRI SCHEME
Hiroyuki Asada, *Soshi Kawai, Keisuke Sawada*

11734 ASSESSMENT OF DISCONTINUOUS GALERKIN SCHEME FOR HIGH-FIDELITY SIMULATIONS OF TURBULENT FLOWS
Eric Ching,, *Yu Lv, Peter Ma, Matthias Ihme*

Monday, June 6 **Room 17**
14:00-16:00

CS 1020 - 1: EVOLUTIONARY AND DETERMINISTIC METHODS FOR DESIGN, OPTIMIZATION AND CONTROL

Chair: Paolo Castaldo

7588 SEISMIC RETROFIT OF EXISTING BUILDINGS THROUGH THE DISSIPATIVE COLUMNS
Paolo Castaldo, *Bruno Palazzo, Francesco Perri, Ivana Marino, Marco Faraco*

7577 SEISMIC RELIABILITY-BASED DESIGN OF STRUCTUTRES ISOLATED BY FPS
Paolo Castaldo, *Guglielmo Amendola, Bruno Palazzo*

13458 RELIABILITY TEST DEMONSTRATION METHOD FOR EXPONENTIAL LIFE SYSTEM WITH RELIABILITY GROWTH UNDER THE CONDITION OF IN-TIME CORRECTIVE STRATEGY
Yunyan Xing, *Ping Jiang, Feng Yao, Zhiwei Yang, Michael Emmerich, Thomas Bäck*

7610 AN EXAMPLE OF ENERGY DISSIPATION OPTIMIZATION FOR STEEL MRFS WITH PIN-JOINT COLUMN BASES
Elide Nastri, *Annabella Paciello*

7614 ECCENTRICALLY BRACED FRAMES DESIGNED FOR THE ENERGY DISSIPATION OPTIMIZATION
Elide Nastri

Monday, June 6 **Room 18**
14:00-16:00

CS 751 - 1: SMART MATERIALS AND STRUCTURES

Chair: Ryan Orszulik

7571 FULL SYSTEM MODELING OF A THREE DEGREE OF FREEDOM PIEZOELECTRICALLY DRIVEN NANOPOSITIONING PLATFORM INCLUDING POSITION FEEDBACK CONTROL
Ryan Orszulik, *Ulrich Gabbert*

9224 SIMULATION OF AN EXTRINSIC AND AUTONOMOUS SELF-HEALING MATERIAL USING THE THEORY OF POROUS MEDIA
Steffen Specht, *Joachim Bluhm, Jörg Schröder*

10578 A THERMOMECHANICAL MODEL OF SHAPE MEMORY ALLOYS IN FINITE DEFORMATION
Jun Wang, *Ziad Moumni, Weihong Zhang*

10919 SHAKEDOWN BASED MODEL FOR HIGH CYCLE FATIGUE OF SHAPE MEMORY ALLOYS
Xiaojun Gu, *Ziad Moumni, Wael Zaki, Weihong Zhang*

11624 FREQUENCY EFFECT ON CYCLIC BEHAVIOR AND LOW-CYCLE FATIGUE OF PSEUDOELASTIC SHAPE MEMORY ALLOYS
Yahui Zhang, *Ziad Moumni, Yajun You, Weihong Zhang*

Monday, June 6 **Room 20**
14:00-16:00

CS 230: MODELLING OF CONCRETE AND MEASURING
Chair: Etienne Malachanne

5387 A COHESIVE ZONE MODEL FOR THE CHARACTERISATION OF THE INTERFACIAL TRANSITION ZONE (ITZ) BETWEEN CEMENT PASTE AND AGGREGATE
***Etienne Malachanne**, Marie Salgues, Mouad Jebli, Frederic Jamin*

11714 ACCURATE AND EFFICIENT MODELING OF THE CYCLIC BEHAVIOR OF RC STRUCTURAL MEMBERS
***Christos Mourlas**, Manolis Papadrakakis, George Markou*

7856 AN EXACT SHEAR STRAIN APPROACH FOR RC FRAME ELEMENTS WITH AXIAL-SHEAR INTERACTION.
***Alexander Kagermanov**, Paola Ceresa*

11947 CROSS-SECTIONAL FAILURE CRITERION COMBINED WITH STRAIN-HARDENING DAMAGE MODEL FOR SIMULATION OF THIN-WALLED TEXTILE-REINFORCED CONCRETE SHELLS
***Ehsan Sharei**, Rostislav Chudoba, Alexander Scholzen*

5328 A MESOSCALE FINITE ELEMENT MODEL FOR FIBRE REINFORCED CONCRETE
***Philip Huschke**, Jörg F. Unger*

16740 SEISMIC ASSESSMENT OF A 5-STOREY RETROFITTED RC BUILDING
***Hussein Bark,** George Markou, Christos Mourlas, Manolis Papadrakakis*

Monday, June 6 **Room 21**
14:00-16:00

CS 1010 - 1: COMPUTATIONAL INVERSE PROBLEMS AND OPTIMIZATION
Chair: Tamara Nestorović

12084 INVERSION METHODS BASED ON KALMAN FILTERING FOR IDENTIFICATION IN TUNNELING PROBLEMS
***Tamara Nestorović**, Luan T. Nguyen*

6841 METEOROLOGICAL DATA ASSIMILATION USING AN ADJOINT PROGRAM GENERATED BY AUTOMATIC DIFFERENTIATION
Yasuyoshi Horibata

8388 A FRAMEWORK FOR THE DESIGN BY OPTIMIZATION OF HYDROFOILS UNDER CAVITATING CONDITIONS
*Paolo Olivucci, **Stefano Gaggero***

11693 APPLICATION OF THE DECONVOLUTION METHODS FOR PROCESSING OF MEASUREMENT SIGNALS IN THE FAST PROCESSES
***Marat Goldfeld**, Valery Pickalov*

7315 EVOLUTIONARY TOPOLOGY OPIMIZATION USING PARAMETERIZED B-SPLINE SURFACE
***Igor Pehnec**, Damir Vucina, Frane Vlak*

Monday, June 6 **Room 22**
14:00-16:00

MS 902 - 1: INNOVATIVE NUMERICAL APPROACHES FOR MULTI-PHYSICS PROBLEMS
MS Organizers: Anna Pandolfi, Laurent Stainier, Kerstin Weinberg
Chair: Anna Pandolfi

6991 NUMERICAL PROPERTIES OF A DISCONTINUOUS GALERKIN FOMULATION FOR ELECTRO-THERMAL COUPLED PROBLEMS
***Lina Homsi**, Christophe Geuzaine, Ludovic Noels*

6329 THE SCHWARZ ALTERNATING METHOD FOR CONCURRENT MULTISCALE IN FINITE DEFORMATION SOLID MECHANICS
***Alejandro Mota**, Irina Tezaur, Coleman Alleman*

5327 MATHEMATICAL MODELS OF IN VIVO LARGE MICROCIRCULATORY NETWORKS
***Francesca Malgaroli**, Paola Causin*

10474 PHASE-FIELD MODELING OF FRACTURE IN HYDROGELS UNDERGOING LARGE DEFORMATION COUPLED TO DIFFUSION
***Lukas Böger**, Christian Miehe*

10018 PHASE-FIELD APPROACH FOR PRESSURE DRIVEN CRACK PROPAGATION
***Carola Bilgen**, Christian Hesch, Kerstin Weinberg*

7782 A REDUCED-ORDER HETEROGENEOUS MULTI-SCALE METHOD FOR SIMULATION OF COMPLEX FLUID FLOWS
***Nehzat Emamy**, Maria Lukacova, Thorsten Raasch, Leonid Yelash, Peter Virnau, Florian Kummer*

Monday, June 6 **Room 23**
14:00-16:20

MS 913 - 1: HIGH-ORDER METHODS FOR POLYGONAL AND POLYHEDRAL MESHES
MS Organizers: Lourenço Beirao da Veiga, Franco Brezzi, Donatella Marini, Alessandro Russo
Chair: Alessandro Russo

6317 **KEYNOTE:** SERENDIPITY NODAL VEM SPACES
*Lourenco Beirao da Veiga, Franco Brezzi, **Donatella Marini**, Alessandro Russo*

6247 VEM AND TOPOLOGY OPTIMIZATION ON POLYGONAL MESHES
*Paola F. Antonietti, Matteo Bruggi, Simone Scacchi, **Marco Verani***

6682 VIRTUAL ELEMENT METHOD FOR THE LAPLACE-BELTRAMI EQUATION ON SURFACES
***Massimo Frittelli**, Ivonne Sgura*

4894 A HYBRID HIGH-ORDER METHOD FOR THE CAHN-HILLIARD EQUATION
***Florent Chave**, Daniele A. Di Pietro, Fabien Marche*

6410 HYBRID HIGH-ORDER DISCRETIZATIONS OF DIFFUSION PROBLEMS WITH VARIABLE COEFFICIENTS
*Daniele A. Di Pietro, Alexandre Ern, **Simon Lemaire***

6815 A VIRTUAL ELEMENT METHOD FOR STRUCTURAL MECHANICS PROBLEMS
*Lourenco Beirão da Veiga**, Carlo Lovadina**, David Mora*

16:00-16:30
Coffee Break

TECHNICAL SESSIONS

Monday, June 6 **Zeus East**
16:30-18:30

CS 990 - 2: PARTICLE-BASED METHODS
Chair: Valeri Saveliev

9323 STATISTICAL DISTRIBUTION FUNCTION FOR THE CHARGED PARTICLES IN MAGNETIC FIELD
B.Chetverushkin, Nicola D'Ascenzo, ***Valeri Saveliev***

7091 CONTACT METHODS FOR THE INTERACTION OF PARTICLES WITH RIGID AND DEFORMABLE STRUCTURES USING A COUPLED DEM-FEM PROCEDURE
Miquel Santasusana*, Eugenio Oñate, Joaquín Irazábal, Josep M. Carbonell*

10329 BLOOD FLOW SIMULATION USING SMOOTHED PARTICLE HYDRODYNAMICS
Mohammed Al-Saad, *Sivakumar Kulasegaram, Stephane P.A. Bordas*

5888 TOWARDS MULTIPHYSICS SIMULATION OF DEEP PENETRATION LASER WELDING USING SMOOTHED PARTICLE HYDRODYNAMICS
Haoyue Hu*, Peter Eberhard, Florian Fetzer, Peter Berger*

9045 MULTIPLE TIMESCALE MODELLING OF PARTICLES DE-AGGLOMERATION IN METAL MELTS SUBJECTED TO EXTERNAL FORCES
Anton Manoylov*, Georgi Djambazov, Valdis Bojarevics, Koulis Pericleous*

9715 A DISCRETE ELEMENT APPROACH FOR SIMULATING THE PROCESSING OF FIBROUS BIOMASS
Tom Leblicq*, Simon Vanmaercke, Herman Ramon, Wouter Saeys*

Monday, June 6 **Zeus West**
16:30-18:30

MS 609 - 2: ADVANCED COMPUTATIONAL MODELING OF BATTERIES AND FUEL CELLS
MS Organizers: Edwin Knobbe, Wolfgang A. Wall
Chair: Wolfgang A. Wall

11876 CHALLENGES FOR ELECTRO-CHEMICAL SIMULATIONS OF LITHIUM-ION CELLS FOR AUTOMOTIVE APPLICATIONS
Edwin Knobbe*, Georg Bauer, Peter Lamp*

11828 PERFORMANCE MODELING OF ALL-SOLID-STATE LITHIUM-ION BATTERIES
André Weber*, Philipp Braun, Ellen Ivers-Tiffée*

10241 TEMPERATURE DEPENDENT THERMODYNAMIC FACTORS AND TRANSFERENCE NUMBERS OF LITHIUM ION BATTERY ELECTROLYTES
Johannes Landesfeind*, Martin Frankenberger, Andreas Ehrl, Wolfgang A. Wall, Hubert A. Gasteiger*

10199 LOCAL POTENTIAL MEASUREMENTS WITHIN MODIFIED COMMERCIAL LI-ION BATTERIES FOR VALIDATION OF MULTI-DIMENSIONAL MODELS
Simon Vincent Erhard*, Patrick Jürgen Osswald, Alexander Rheinfeld, Jörn Wilhelm, Stephan Kosch, Andreas Jossen*

10179 LOCALISED THERMAL AND ELECTRICAL EFFECTS DURING HIGH CURRENT SCENARIOS FOR IDENTIFYING LIMITING PERFORMANCE AND SAFETY CHARACTERISTICS OF LITHIUM-ION CELLS
Alexander Rheinfeld*, Simon Vincent Erhard, Stephan Kosch, Andreas Jossen*

Monday, June 6 **Zeus North**
16:30-18:30

MS 906 - 2: MATHEMATICAL ADVANCES IN ISOGEOMETRIC ANALYSIS
MS Organizers: Annalisa Buffa, John A. Evans, Thomas J.R. Hughes, Giancarlo Sangalli
Chair: Mattia Tani

11276 **KEYNOTE:** MULTIGRID METHODS FOR ISOGEOMETRIC STRUCTURE-PRESERVING DISCRETIZATIONS
John Evans*, Joseph Benzaken, Christopher Coley*

11557 SPACE-TIME ISOGEOMETRIC ANALYSIS OF PARABOLIC EVOLUTION PROBLEMS
Ulrich Langer, Stephen E. Moore, ***Martin Neumüller***

11721 ADAPTIVE METHODS FOR STOKES
Andrea Bressan*, Bert Jüttler*

5250 SEMI ANALYSIS-SUITABLE T-SPLINES
Xin Li

8932 MULTIPATCH CUT ISOGEOMETRIC ANALYSIS OF PDES ON SURFACES
Tobias Jonsson, ***Mats G. Larson****, Karl Larsson*

Monday, June 6 **Minos East**
16:30-18:30

MS 501 - 2: ALGORITHMIC ASPECTS OF HIGH-PERFORMANCE COMPUTING FOR MECHANICS AND PHYSICS
MS Organizers: Santiago Badia, Victor Calo, Javier Principe
Chair: Javier Principe

6297 PARALLEL NUMERICAL LINEAR ALGEBRA: SOME RECENT STEPS TOWARDS EXTREME SCALE
Louis Poirel*, Emmanuel Agullo, Mathieu Faverge, Luc Giraud*

9277 DOMAIN DECOMPOSITION WITH OPTIMIZED SCHWARZ METHODS IN HPDDM LIBRARY
Ryadh Haferssas*, Pierre Jolivet, Frédéric Nataf*

7245 ENHANCING THE EFFICIENCY AND ROBUSTNESS OF MONOLITHIC FLUID-STRUCTURE INTERACTION SOLVERS
Matthias Mayr*, Michael W. Gee*

11812 FAST COMPUTATIONS ON GPUS FOR WETTING PHENOMENA
Grigoris Kasapidis*, George Pashos, George Kokkoris, Andreas G. Boudouvis*

12127 ENHANCING THE PERFORMANCE OF PRIMAL AND DUAL DOMAIN DECOMPOSITION SOLVERS IN THE CONTEXT OF STRUCTURAL DYNAMICS
George Stavroulakis*, Manolis Papadrakakis*

10903 EXTREME SCALE STABILIZED FINITE ELEMENT FLOW SIMULATIONS
Kenneth Jansen, Michel Rasquin, Cameron Smith, ***Benjamin Matthews***

Monday, June 6 **Minos North**
16:30-18:30

MS 1101 - 2: REDUCED BASIS, POD AND PGD MODEL ORDER REDUCTION TECHNIQUES

MS Organizers: Francisco Chinesta, Elias Cueto, Antonio Huerta, Pierre Ladeveze, Gianluigi Rozza

Chair: Gianluigi Rozza

6407 ON THE MODEL ORDER REDUCTION OF SHAPE-DEPENDENT PARAMETRIC PROBLEMS
*David González, **Elías Cueto**, Francisco Chinesta*

9013 RECENT ADVANCES AND PERSPECTIVES ON REDUCED ORDER MODELLING IN COMPUTATIONAL FLUID DYNAMICS AND BEYOND
***Francesco Ballarin**, Gianluigi Rozza*

7700 DIMENSIONAL HYPERREDUCTION OF HIERARCHICAL MULTISCALE MODELS
***Joaquín A. Hernández**, Javier Oliver*

9280 MODEL ORDER REDUCTION IN STRUCTURAL DYNAMICS
***Raul Rodriguez Sanchez**, Martin Buchschmid, Gerhard Müller*

6520 PARAMETRIC SIMULATION OF THE RAILWAY CATENARY INCLUDING DROPPER SLACKENING AND APPLYING THE PGD TECHNIQUE
***Santiago Gregori**, Manuel Tur, Enrique Nadal, F. Javier Fuenmayor, Francisco Chinesta*

Monday, June 6 **Minos South**
16:30-18:30

MS 503 - 2: HPC-BASED SIMULATIONS FOR THE ENGINEERING REALM AND INDUSTRIAL APPLICATIONS

MS Organizers: Makoto Tsubokura, Mariano Vázquez, Takayuki Aoki

Chair: Takayuki Aoki

8547 DIRECT AEROACOUSTIC SIMULATION RELATED WITH MODE CHANGE IN A RECORDER
*Hiroshi Yokoyama, **Ryoma Hamasuna**, Akira Miki, Hirofumi Onitsuka, Akiyoshi Iida*

8335 MULTI-PHYSICS AERODYNAMICS SIMULATION OF FULL-SCALE ROAD VEHICLE FOR ENGINEERING DESIGN PROCESS BASED ON LARGE-SCALE PARALLEL CFD FRAMEWORK
***Keiji Onishi**, Makoto Tsubokura, Takashi Kamioka*

7041 EFFECT OF FUEL RATIO OF BITUMINOUS COALS ON PULVERIZED COAL COMBUSTION IN MULTI-BURNER SYSTEM USING LARGE-EDDY SIMULATION
***Masaya Muto**, Hiroaki Watanabe, Ryoichi Kurose*

8074 LARGE-SCALE LES ANALYSIS OF AUTOMOTIVE ENGINE COOLING FAN
***Yuji Kobayashi**, Kenji Yoshida, Itsuhei Kohri, Masaharu Sakai, Hideo Asano*

7553 NON-INTRUSIVE DOMAIN DECOMPOSITION ALGORITHM FOR SOLVING NONLINEAR PROBLEMS
***Mickaël Duval**, Stéphane Guinard, Jean-Charles Passieux, Michel Salaün*

Monday, June 6 **Danae**
16:30-18:30

MS 1001 - 1: STRUCTURAL AND MULTIDISCIPLINARY OPTIMIZATION

MS Organizers: J.F. Aguilar Madeira, Helder C. Rodrigues

Chair: José Guedes

9436 COMPUTING GLOBAL AND LOCAL PARETO FRONTS WITH DIRECT SEARCH
*A. L. Custodio, **J. F. A. Madeira***

5081 AN ARCHITECTURE-ORIENTED APPROACH IN SHAPE AND TOPOLOGY OPTIMIZATION
***Georgios Michailidis**, François Jouve*

6074 STRUCTURAL SHAPE OPTIMIZATION USING A FICTITIOUS DOMAIN DISCRETIZATION TECHNIQUE
***Stefan Riehl**, Paul Steinmann*

5544 SHAPE-TOPOLOGY OPTIMIZATION FOR DESIGNING SHELL STRUCTURES
***Hirotaka Nakayama**, Masatoshi Shimoda*

9949 SHAPE OPTIMIZATION FOR CONTACT PROBLEMS IN LINEAR ELASTICITY
Aymeric Maury

16640 FORM FINDING ON PARAMETRIC SURFACES. OPTIMIZATION AND CORRELATIONS OF ARCHITECTURAL FLUIDITY AND STRUCTURAL RESPONSE
*Dimitrios Antoniou, Katerina Liapi, **Nikolaos Bakas**, Ioakeim Liassides, Ioannis Georgiou, Nikolaos Varlagkas*

Monday, June 6 **Europa**
16:30-18:30

MS 914 -2: INNOVATIVE NON-BOUNDARY-FITTED DISCRETIZATION METHODS

MS Organizers: Fehmi Cirak, John E. Dolbow, Isaac Harari, Ming-Chen Hsu, Thomas J.R. Hughes, Dominik Schillinger

Chair: Fehmi Cirak

11315 SHARP AND DIFFUSE INTERFACE METHODS: TWO FUNDAMENTAL PARADIGMS FOR NON-BOUNDARY-FITTED MODELING AND DISCRETIZATION
***Dominik Schillinger**, Lam Nguyen, Stein Stoter, Atanas Stavrev, Ying Zhao*

11122 MODELING OF LI-ION BATTERY COMPOSITE ELECTRODES WITH THE FINITE CELL METHOD
***Ying Zhao**, Dominik Schillinger, Bai-Xiang Xu*

11328 HIGHER-ORDER IMMERSED B-SPLINE FINITE ELEMENTS
*Musabbir Majeed, **Fehmi Cirak***

7519 CUTFEM ON HIERARCHICAL B-SPLINE CARTESIAN GRIDS WITH APPLICATIONS TO FLUID-STRUCTURE INTERACTION
***Chennakesava Kadapa**, Wulf Dettmer, Djordje Peric*

8362 IMMERSOGEOMETRIC FLUID FLOW ANALYSIS AND DESIGN OPTIMIZATION USING B-REP CAD MODELS
***Ming-Chen Hsu**, Chenglong Wang, Fei Xu, Michael C.H. Wu, Adarsh Krishnamurthy*

8982 A DISCONTINUOUS CUT FINITE ELEMENT FRAMEWORK FOR MULTIDIMENSIONAL MULTIPHYSICS PROBLEMS
*Erik Burman, Peter Hansbo, Mats G. Larson, **Andre Massing***

Monday, June 6 **Leda**
16:30-18:50

MS 706: MODELING OF FIBER-BASED STRUCTURES - TEXTILES AND TEXTILE REINFORCED COMPOSITES

MS Organizers: Yordan Kyosev, Philippe Boisse, Nahiene Hamila, Damien Durville

Chair: Joris Remmers

10596 MULTI-SCALE FRAMEWORK FOR MODELLING CARBON FIBRE WEAVES BASED ON STOCHASTIC REINFORCEMENT GEOMETRY
*Andy Vanaerschot, **Karen Soete**, Stepan Lomov, Dirk Vandepitte*

7909 LEVEL SET-BASED TOOLS FOR THE GENERATION AND DISCRETIZATION OF TEXTILE-REINFORCED COMPOSITE RVES
***Badadjida Wintiba**, Bernard Sonon, Thierry J. Massart*

11703 FROM IMAGES OR VOXELS TO FEM MODELS. APPLICATION TO THE MESHING OF 3D INTERLOCK COMPOSITE STRUCTURES
***Alain Rassineux**, Gaëtan Hello, Zoheir Aboura, Julien Schneider*

11254 AN ISOGEOMETRIC ANALYSIS BASED FINITE CELL METHOD FOR THE ANALYSIS OF FAILURE IN 3D WOVEN COMPOSITES
***Joris Remmers**, Sebastiaan Brandhof, Clemens Verhoosel*

9824 INVERSE IDENTIFICATION OF THE BENDING STIFFNESS OF A BRAIDED POLYETHYLENE TWINE SUBJECT TO LARGE DEFORMATION: APPLICATION TO THE IDENTIFICATION OF THE MESH OPENING RIGIDITY OF FISHING NETS
***Barthélémy Morvan**, Guilhem Bles, Nicolas Dumergue, Daniel Priour*

9020 AN OPTIMIZED MODEL OF DUAL-SCALE GEOMETRY OF TEXTILE REINFORCEMENT BASED ON X-RAY MICROTOMOGRAPHY FOR MODELING OF RTM PROCESSES
***Anna Madra**, François Trochu, Piotr Breitkopf*

5239 NUMERICAL STUDY OF DAMAGE AT THE MESOSCOPIC SCALE OF WOVEN POLYMER MATRIX COMPOSITES.
***Christian Fagiano**, Aurélien Doitrand, Vincent Chiaruttini, François-Henri Leroy, Martin Hirsekorn*

Monday, June 6 **Athena**
16:30-18:30

MS 302 - 2: MESH GENERATION AND ADAPTION

MS Organizers: Josep Sarrate, Xevi Roca, Rafael Montenegro, Eloi Ruiz

Chair: Josep Sarrate

6836 AN ERROR-ESTIMATE-FREE MESH REFINEMENT AND COARSENING METHOD FOR THE PHASE FIELD APPROACH TO FRACTURE
***Yihuan Li**, Yongxing Shen*

8097 R-ADAPTATION STRATEGIES FOR WAVE RUNUP ON COMPLEX BATHYMETRIES
***Luca Arpaia**, Mario Ricchiuto*

8380 UNIVERSAL MESHES FOR BRANCHED CRACK PROPAGATION
***Can Wu**, Yongxing Shen*

8424 CARTESIAN MESHES WITH DYNAMIC LOCAL WAVELET-BASED REFINEMENT FOR FLOW AROUND BODY PROBLEMS.
***Kirill Merkulov**, Igor Menshov, Andrew Plenkin*

7307 ANALYSIS OF SEVERAL OBJECTIVE FUNCTIONS FOR OPTIMIZATION OF HEXAHEDRAL MESHES
***José Iván López González**, Marina Brovka, José María Escobar Sánchez, Rafael Montenegro Armas, Guillermo Valentín Socorro Marrero*

Monday, June 6 **Artemis**
16:30-18:30

MS 903 - 2: ADVANCES IN FICTITIOUS DOMAIN METHODS FOR SOLID MECHANICS

MS Organizers: Alexander Düster, Ernst Rank, Stefan Kollmannsberger, Andreas Schröder

Chair: Alexander Düster

9398 **KEYNOTE:** A FICTITIOUS DOMAIN LEVELSET METHOD FOR INCLUSION DETECTION
Herbert Egger

8229 PRECONDITIONING THE FINITE CELL METHOD WITH APPLICATION TO FLUID-STRUCTURE INTERACTIONS
***Frits de Prenter**, Clemens Verhoosel, Harald van Brummelen*

8999 WEAK IMPOSITION OF CONTACT CONSTRAINTS ON AUTOMATICALLY RECOVERED HIGH ORDER EMBEDDED INTERFACES
***Tino Bog**, Nils Zander, Stefan Kollmannsberger, Ernst Rank*

8878 CUTFEM FOR LINEAR ELASTICITY
*Peter Hansbo, Mats G Larson, **Karl Larsson***

8933 AUTOMATIC ELASTIC CHARACTERIZATION OF ALUMINIUM FOAMS FROM IMAGES BY USING H-ADAPTED MESHES WITH THE CARTESIAN GRID FINITE ELEMENT METHOD
*L. Giovannelli, A.C. Cárcel, B. Cárcel, **Juan José Ródenas***

Monday, June 6 **Aphrodite**
16:30-18:30

MS 921 - 2: RECENT ADVANCES IN BOUNDARY ELEMENT METHODS

MS Organizers: Gernot Beer, Luiz Wrobel, Martin Schan

Chair: Gernot Beer

9429 A NEW A POSTERIORI ERROR ESTIMATE FOR THE BEM IN 3D-ACOUSTICS
***Marc Bakry**, Sébastien Pernet, Francis Collino*

5899 ENERGETIC BEM FOR THE NUMERICAL SOLUTION OF DAMPED WAVE PROPAGATION EXTERIOR PROBLEMS
***Alessandra Aimi**, Mauro Diligenti, Chiara Guardasoni*

10422 TREFFTZ-BASED DUAL RECIPROCITY METHOD FOR NON-HOMOGENEOUS HYPERBOLIC BOUNDARY VALUE PROBLEMS
***Ionut Dragos Moldovan**, Lucian Radu*

7197 A CHEBYSHEV INTERPOALTION-BASED FAST MULTIPOLE METHOD FOR POROELASTICITY
***Barbara Knöbl**, Martin Schanz*

10279 ANISOTROPIC MESH ADAPTATION FOR THE BOUNDARY ELEMENT METHOD
***Samuel Groth**, Stephanié Chaillat, Francis Collino, Adrien Loseille*

11838 A FEM-BEM NON CONFORMING COUPLING FOR WAVE PROPAGATION PROBLEMS IN UNBOUNDED DOMAINS
*Silvia Bertoluzza, **Silvia Falletta**, Giovanni Monegato*

Monday, June 6 **Antigoni**
16:30-18:30

MS 1306 -2: ERCOFTAC SIG-45: UNCERTAINTY QUANTIFICATION IN CFD AND FLUID STRUCTURE INTERACTION

MS Organizers: Didier Lucor, Sunetra Sarkar
Chair: Sunetra Sarkar

9082 TEST CASE BL3 - HEAVING AND PITCHING AIRFOIL, 4TH INTERNATIONAL WORKSHOP ON HIGH-ORDER CFD METHODS
***Per-Olof Persson**, Krzysztof Fidkowski*

10891 LOW RANK APPROXIMATION AND SAMPLING BASED METHOD FOR RANDOM VIBRO-ACOUSTIC ANALYSIS
***Mathilde Chevreuil**, Cédric Leblond, Yendoubouam Tampango, Anthony Nouy, Jean-François Sigrist*

10670 A KRIGING-PDD SURROGATE MODEL FOR UNCERTAINTY QUANTIFICATION
***Andrea Francesco Cortesi**, Pietro Marco Congedo*

10164 UNCERTAINTY QUANTIFICATION IN NUMERICAL SIMULATIONS OF THE FLOW IN THORACIC AORTIC ANEURYSMS
***Alessandro Boccadifuoco**, Alessandro Mariotti, Simona Celi, Nicola Martini, Maria Vittoria Salvetti*

10640 REVIEW OF MULTI-FIDELITY SURROGATE MODELS
***M. Giselle Fernandez-Godino**, Chanyoung Park, Nam Ho Kim, Raphael T. Haftka*

Monday, June 6 **Apollo East**
16:30-18:30

MS 303 - 2 : CURVED MESH GENERATION FOR HIGH-ORDER METHODS

MS Organizers: Xevi Roca, Josep Sarrate
Chair: Xevi Roca

7234 HIGH-ORDER CURVED MESH GENERATION BY USING A FINE TARGET MESH
***Verena Schmid**, Hadrien Beriot, Onur Atak, Gwenael Gabard*

7117 VALIDATING AND GENERATING CURVED UNSTRUCTURED HEXAHEDRAL MESHES
*Abel Gargallo-Peiró, **Eloi Ruiz-Gironés**, Josep Sarrate, Xevi Roca*

9380 HIGH-ORDER GEOMETRIC PDE-DRIVEN SMOOTHING ON SURFACE MESHES
***Tristan Delaney**, Xiangmin Jiao*

10770 IMAGE SEGMENTATION TECHNIQUES FOR BIOMEDICAL MODELING: ELECTROPHYSIOLOGY AND HEMODYNAMICS
***Alexander Danilov**, Roman Pryamonosov, Alexandra Yurova*

Monday, June 6 **Apollo West**
16:30-18:30

MS 1104 - 2: REDUCED-ORDER MODELS FOR PDE-CONSTRAINED OPTIMIZATION AND INVERSE PROBLEMS

MS Organizers: Alfio Quarteroni, Andrea Manzoni
Chair: Karsten Urban

9223 CALIBRATION WITH REDUCED ORDER MODELS
***Ekkehard Sachs**, Marina Schneider*

5877 GENERALIZED SPACE-TIME-INPUT SPACE POD FOR OPTIMAL CONTROL OF THE UNSTEADY BURGERS EQUATION
***Peter Benner**, Jan Heiland*

5401 REDUCED BASIS LANDWEBER METHOD FOR NONLINEAR ILL-POSED INVERSE PROBLEMS
***Dominik Garmatter**, Bastian Harrach, Bernard Haasdonk*

8720 ROBUST PDE-CONSTRAINED OPTIMIZATION USING A SECOND ORDER APPROXIMATION TECHNIQUE AND MODEL ORDER REDUCTION
***Oliver Lass**, Stefan Ulbrich*

Monday, June 6 **Room 1**
16:30-18:30

MS 1307 - 2: NON-INTRUSIVE SURROGATE MODELS FOR UNCERTAINTY QUANTIFICATION IN HIGH DIMENSIONS

MS Organizers: Bruno Sudret, Eleni Chatzi, Jean-Marc Bourinet, Nicolas Gayton
Chair: Katerina Konakli

7382 CALIBRATION OF NESTED COMPUTER MODELS
***Sophie Marque-Pucheu**, Guillaume Perrin, Josselin Garnier*

6762 AN OPTIMAL SENSOR PLACEMENT METHOD FOR SHM BASED ON BAYESIAN EXPERIMENTAL DESIGN AND POLYNOMIAL CHAOS EXPANSION
***Giovanni Capellari**, Eleni Chatzi, Stefano Mariani*

12362 OPTIMAL AND RELIABLE DESIGN OF THE BONDING WIRE FOR A POWER MODULE BY USING RELIABILITY-BASED DESIGN OPTIMIZATION AND A KRIGING METAMODEL
***Younes Aoues**, Abderahman Makhloufi, Philippe Pougnet, Abdelkhalak El-Hami*

5946 BEARING CAPACITY OF STRIP FOOTINGS ON SPATIALLY RANDOM SOILS USING KRIGING AND MONTE CARLO SIMULATION
*Jawad Thajeel,, **Tamara Al-Bittar**, Nour Issa, Abdul Hamid Soubra ,*

MS 1309 - 1: SCALABLE MULTI-FIDELITY MODELING FOR DESIGN, UNCERTAINTY QUANTIFICATION, AND INVERSE PROBLEMS

MS Organizers: Paris Perdikaris, George Em. Karniadakis
Chair: Paris Perdikaris

8901 DATA-INFORMED COARSE-GRAINING FOR TURBULENT FLOW SIMULATIONS
***Karthik Duraisamy**, Eric Parish*

8951 DESIGN OPTIMIZATION WITH QUANTIFIED UNCERTAINTIES UNDER A COMPUTATIONAL BUDGET
***Ilias Bilionis**, Piyush Pandita, Jitesh Panchal*

Monday, June 6 **Room 2**
16:30-18:30

CS 420 - 2: MULTI-PHASE AND CHEMICALLY REACTING FLOWS

Chair: Taku Nonomura

10945 ON THE THICKNESS OF DISCONTINUITIES COMPUTED BY THINC AND RK SCHEMES
***Taku Nonomura**, Keh-Ming Shyue*

11575 RESEARCH OF UNSTEADY FLOW REGIMES IN CHANNEL OF HYPERSONIC INLET
*Natalya Fedorova, **Marat Goldfeld***

10224 CHARACTERISING DROPLET IMPACT ON A FLAT SURFACE USING THE VOLUME OF FLUID METHOD
***Marco Macchi**, Jennifer Wen, Konstantin Volkov, Ali Heidari, Yongmann Chung*

11485 A 3D UNSTEADY NUMERICAL SIMULATION OF THE

REFRIGERANT FLOW EVAPORATION IN A PLATE HEAT EXCHANGER
***Mirza Popovac**, Gerwin Schmid, Michael Lauermann*

11834 EXPLICIT DARCY'S LAW BOUNDARY CONDITION WITH COMBINED CONTINUUM AND DISCRETE MODEL FOR PRESSURE DRIVEN MEMBRANE APPLICATIONS
***Tomi Naukkarinen**, Teemu Turunen-Saaresti*

Monday, June 6 **Room 4**
16:30-18:30

CS 211: CRACK PROPAGATION
Chair: Sylvia Feld-Payet

9741 A MARCHING RIDGES ALGORITHM FOR CRACK PATH TRACKING IN REGULARIZED MEDIA
Sylvia Feld-Payet

12182 CRACK PATH FIELD AND STRAIN INJECTION TECHNIQUES IN 3D FRACTURE MODELING OF QUASI-BRITTLE MATERIALS
***Ivo F. Dias**, Xavier Oliver, Oriol Lloberas-Valls*

11625 3D ADAPTIVE PROCESS OF CRACKS INITIATION AND PROPAGATION IN DUCTILE MATERIALS
***Fangtao Yang**, Alain Rassineux, Carl Labergere, Khemais Saanouni*

6145 2D CRACK MODELLING USING A NEW CRACKING PARTICLE METHOD COMBINED WITH AN ADAPTIVITY STRATEGY
***Weilong Ai**, Charles Augarde*

11939 ULTRASONIC GUIDED WAVES INSPECTION OF PIPES FROM ONE END TO THE FIRST BENT
***Mihai Valentin Predoi**, Marian Soare, Ovidiu Vasile, Mihail Boiangiu*

8270 DISCRETE CRACK DYNAMICS: A NEW TOOL TO STUDY THE CRACK PROPAGATION PATH
***Mahdieh T. Ebrahimi**, Daniele Dini, Daniel Balint, Adrian Sutton*

Monday, June 6 **Room 5**
16:30-18:30

CS 840 - 2: MULTI-SCALE COMPUTATIONAL METHODS FOR SOLIDS AND FLUIDS
Chair: Antoine Brunet

6947 NONLINEAR PATCH METHOD AND APPLICATION
***Antoine Brunet**, Pierre Sarrailh, François Rogier, Jean-François Roussel, Denis Payan*

6771 THE GEMA FRAMEWORK – AN INNOVATIVE FRAMEWORK FOR THE DEVELOPMENT OF MULTIPHYSICS AND MULTISCALE SIMULATIONS
***Carlos Augusto Teixeira Mendes**, Marcelo Gattass, Deane Roehl*

7617 ASSESSMENT OF A CONTINUUM MICROMECHANICS-BASED MULTISCALE MODEL FOR CONCRETE BY MEANS OF SENSITIVITY ANALYSIS AND UNCERTAINTY PROPAGATION
***Luise Göbel**, Andrea Osburg, Tom Lahmer*

8137 COUPLED ATOMISTIC/DISCRETE-DISLOCATION METHOD IN 3D
***Max Hodapp**, William Curtin, Jean-François Molinari, Guillaume Anciaux*

8263 SOLUTION TECHNIQUES FOR ANISOTROPIC DIFFUSION OPERATORS ARISING IN MAGNETIZED EDGE PLASMA PHYSICS
*Giorgio Giorgiani, **Eric Serre**, Frederic Schwander, Patrick Tamain*

8775 INFLUENCE OF LODE ANGLE ON MODELLING OF MICRO VOIDS CLOSURE IN HOT METAL FORMING PROCESSES INFLUENCE
***Abdelouahed Chbihi**, Pierre-Olivier Bouchard, Marc Bernacki, Daniel Pino Muñoz*

Monday, June 6 **Room 7**
16:30-18:30

CS 110 - 2: NUMERICAL MODELS IN BIOMECHANICS
Chair: Ángel Giménez

8437 IMPROVED GEOMETRICAL DESIGNS OF VENTRICULAR CATHETERS FOR HYDROCEPHALUS
***Ángel Giménez**, Marcelo Galarza, Olga Pellicer, José Valero, José M. Amigó*

8331 A STUDY OF FUZZY CONTROL SYSTEM FOR PROPER ANASTOMOSIS CONDITION OF STAPLER
*Soonmoon Jung, Hunhee Kim, Taekyeong Lee, Youngho Lee, Jaemin Kim, Heesuk Roh, Dongwook Yang, **Junghwa Hong***

6459 IN-HOUSE MULTIBODY HUMAN MODEL BASED ON EULER PARAMETERS FOR THE FAST IMPACT SCENARIO CALCULATION
***Jan Spicka**, Michal Hajzman, Tomasz Bonkowski*

7094 MASS TRANSFER STUDY OF RHEOLOGICAL FLUIDS IN CAPILLARY MEMBRANE CONTACTORS USING A LBM-FD HYBRID MODEL
***Jonathan Florez Giraldo**, Clara Salueña, Salvatore Cito, Anton Vernet*

8642 DEVELOPMENT OF A CENTRIFUGAL BLOOD PUMP FOR ECMO AND VAD OPERATIONS
*Shinhwa Choi, **Nahmkeon Hur**, Mohammad Moshfeghi, Seongwon Kang, Wonjung Kim*

8925 FINITE ELEMENT MODELING OF VISCOUS MEMBRANES WITH STOCHASTIC EFFECTS
***Roberto F. Ausas**, Fernando Mut, Gustavo C. Buscaglia*

Monday, June 6 **Room 9**
16:30-18:30

CS 750 - 2: COMPUTATIONAL MODELING OF COMPOSITES
Chair: Thomas Bower

5844 MODELLING SOIL-FIBRE COMPOSITE BEHAVIOUR IN FINITE ELEMENT MODELS
***Thomas Bower**, Anthony Jefferson, Peter Cleall*

9724 NUMERICAL SIMULATION OF MECHANICAL BEHAVIOUR OF COMPOSITE SANDWICH PANELS WITH DEFECTS
*Aleksandr Anoshkin, **Valerii Zuiko**, Mikhail Alikin, Anna Tchugaynova*

5785 BOND OF REINFORCEMENT IN REACTIVE POWDER CONCRETE: EXPERIMENTAL STUDY
***Mingde Sun**, Ri Gao, Aili Li, Yongjing Wang*

10915 A DUAL NUMERICAL HOMOGENIZATION TECHNIQUE FOR 2-D WOVEN FABRIC COMPOSITES
*Juan Jose Espadas Escalante, **Per Isaksson**, Nico Van Djik*

6812 NONLINEAR VISCOELASTIC CHARACTERIZATION OF POLYMERIC FOAMS
***Szabolcs Berezvai**, Attila Kossa*

11102 A CHEMO-THERMO-MECHANICAL PHASE-FIELD MODEL FOR THE SOLIDIFICATION AND CURING OF FRPS
***Felix Schwab**, Daniel Schneider, Oleg Tschukin, Michael Selzer, Britta Nestler*

Monday, June 6 **Room 10**
16:30-18:30

MS 505 - 2: INTERACTIVE SIMULATIONS IN COMPUTATIONAL ENGINEERING

MS Organizers: Adrian Harwood, Petra Wenisch
Chair: Petra Wenisch

8065 3D OBJECT CAPTURE PIPELINE BASED ON MICROSOFT KINECT FOR INTERACTIVE FLOW SIMULATION
***Adrian Harwood**, Alistair Revell*

7269 AUTOMATIC VISUALIZATION AND CONTROL OF ARBITRARY NUMERICAL SIMULATIONS
***Jan P. Springer**, Helen Wright*

8053 PARALLELISATION OF ANDROID-BASED MOBILE PLATFORMS FOR REAL-TIME ENGINEERING SIMULATION
***Adrian Harwood**, Alistair Revell*

8685 GPU-BASED INTERACTIVE TOPOLOGY OPTIMIZATION
***Stefan Gavranovic**, Hans-Joachim Bungartz, Utz Wever, Dirk Hartmann*

Monday, June 6 **Room 11**
16:30-18:30

MS 916 - 2: DIRECT METHODS FOR LIMIT STATES OF MATERIALS AND STRUCTURES

MS Organizers: Konstantinos V. Spiliopoulos, Dieter Weichert
Chair: Konstantinos V. Spiliopoulos

9835 A NUMERICAL STUDY ON THE ENDURANCE LIMIT OF PARTICULATE REINFORCED METAL MATRIX COMPOSITES (PRMMCS) USING THE DIRECT METHOD AND THE STATISTICAL LEARNING
***Geng Chen**, Bezold Alexander, Christoph Broeckmann, Dieter Weichert*

11106 SHAKEDOWN ANALYSIS OF PLATE BENDING UNDER STOCHASTIC UNCERTAINTY BY CHANCE CONSTRAINED PROGRAMMING
***Ngoc Trinh Tran**, Thanh Ngoc Tran, H.G. Matthies, G.E. Stavroulakis, M. Staat*

11930 LIMIT ANALYSIS LOCUS OF HIGH STRENGTH STEEL PLATES UNDER NON-QUADRATIC YIELD CRITERIA
***Konstantinos Nikolaou**, Christos Bisbos*

7988 ON SHAKEDOWN OF ELASTIC-PLASTIC BODIES WITH TEMPERATURE-DEPENDENT PROPERTIES
Michael Peigney

5621 LIMIT ANALYSIS OF STRUCTURES MADE OF NONLOCAL MATERIALS
***Aurora Angela Pisano**, Paolo Fuschi*

Monday, June 6 **Room 12**
16:30-18:30

MS 917 - 2: MESOSCOPIC METHODS FOR COMPLEX FLUIDS AND SOFT MATTER

MS Organizers: Zhen Li, Wenxiao Pan, Igor V. Pivkin
Chair: Igor V. Pivkin

6854 MOVEMENT OF LIQUID DROPLETS CONTAINING POLYMERS ON SUBSTRATE
*Heng Wang, **Guohui Hu***

8812 MODELING MECHANICS OF STIMULI-SENSITIVE HYDROGELS USING DISSIPATIVE PARTICLE DYNAMICS
*Svetoslav Nikolov, **Alexander Alexeev***

8241 SMOOTHED DISSIPATIVE PARTICLE DYNAMICS WITH ANGULAR MOMENTUM CONSERVATION
*Kathrin Mueller, **Davod Alizadehrad**, Gerhard Gompper, Dmitry Fedosov*

9642 MULTI-SCALE COARSE-GRAINING FOR CONDENSED PHASE MATERIALS
Zhen Cao

Monday, June 6 **Room 15**
16:30-18:30

CS 930 - 2: HIGH-ORDER DISCRETIZATION METHODS

Chair: Antonio Pascau

5955 DISCONTINUOUS GALERKIN SPECTRAL ELEMENT METHOD AND ENATE APPROACH COMPARISON IN 2D TRANSPORT EQUATIONS.
***Antonio Pascau**, Muslum Arici, Victor Llorente*

8771 ON THE STABILITY AND ACCURACY OF FLUX RECONSTRUCTION SCHEMES FOR IMPLICIT LARGE EDDY SIMULATION OF TURBULENT FLOWS
***Brian Vermeire**, Peter Vincent*

8146 A HIGH-ORDER DISCONTINUOUS GALERKIN METHOD FOR UNSTEADY ADVECTION-DIFFUSION PROBLEMS
***Raunak Borker**, Charbel Farhat, Radek Tezaur*

10081 SPATIALLY WEIGHTED PROJECTIONS FOR DISCONTINUITIES TREATMENT ADAPTED TO COMPACT HIGH-ORDER SCHEMES
***Raphaël Lamouroux**, Jérémie Gressier, Gilles Grondin*

10822 ON THE VERIFICATION OF HIGH-ORDER CFD SOLVERS
***Farshad Navah**, Siva Nadarajah*

Monday, June 6 **Room 17**
16:30-18:30

CS 1020 - 2: EVOLUTIONARY AND DETERMINISTIC METHODS FOR DESIGN, OPTIMIZATION AND CONTROL

Chair: Alexander Zuyev

8264 OPTIMAL CONTROL OF A CHEMICAL REACTOR BY USING PERIODIC BANG-BANG INPUTS: ISOPERIMETRIC PROBLEM
*Peter Benner, Andreas Seidel-Morgenstern, **Alexander Zuyev***

11676 ON STRUCTURAL OPTIMIZATION WITH CATEGORICAL VARIABLES USING EVOLUTIONARY ALGORITHMS
***Huanhuan Gao**, Piotr Breitkopf, Rajan F. Coelho, Manyu Xiao*

4845 EVALUATION OF DIFFERENT APPROACHES FOR THE OPTIMIZATION OF LAYOUT AND CONTROL OF BOOSTER STATIONS
***Philipp Pöttgen**, Peter F. Pelz*

6920 COMPUTING AN OPERATING STRATEGY FOR AN ACTIVE BODY CONTROL WITH DYNAMIC PROGRAMMING IN THE AUTOMOTIVE AREA
***Marlene Utz**, Phillipp Hedrich, Peter F. Pelz*

8717 A COMPARISON OF MILP AND MINLP SOLVER PERFOMANCE ON THE EXAMPLE OF A DRINKING WATER SUPPLY SYSTEM DESIGN PROBLEM
***Lea Rausch**, Philipp Leise, Thorsten Ederer, Lena C. Altherr, Peter F. Pelz*

Monday, June 6 **Room 18**
16:30-18:30

CS 751 - 2: SMART MATERIALS AND STRUCTURES
Chair: Javier Pereiro Barceló

8115 VERY HIGH PERFORMANCE CONCRETE TO DELAY STEEL REINFORCEMENTS BUCKLING
***Javier Pereiro Barceló**, José Luis Bonet Senach*

8119 CONSTITUTIVE MODEL OF SMA REINFORCEMENTS UNDER BUCKLING
***Javier Pereiro Barceló**, José Luis Bonet Senach, José Ramón Albiol Ibañez*

8613 TOWARDS REAL-TIME STRUCTURAL HEALTH MONITORING DAMAGE DETECTION WITHOUT USER INPUT
***Mohmmad Salmanpour**, Zahra Sharif Khodaei, Ferri Aliabadi*

9382 FIBROUS TECTONICS:A RETHINKING OF COMPOSITE PRODUCTION THROUGH INNOVATION AND EXPLORATION OF MOLDING TECHNIQUES AND METHODOLOGIES
David Costanza

Monday, June 6 **Room 21**
16:30-18:30

CS 1010 - 2: COMPUTATIONAL INVERSE PROBLEMS AND OPTIMIZATION
Chair: Christian T. Jacobs

4610 ON THE VALIDITY OF TIDAL TURBINE ARRAY CONFIGURATIONS OBTAINED FROM STEADY-STATE ADJOINT OPTIMISATION
***Christian T. Jacobs**, Matthew D. Piggott, Stephan C. Kramer, Simon W. Funke*

5279 DEVELOPMENT OF ACCURATE PNEUMATIC TYRE FINITE ELEMENT MODELS BASED ON AN OPTIMISATION PROCEDURE
***Chrysostomos-Alexandros Bekakos**, George Papazafeiropoulos, Dan J. O'Boy, Jan Prins*

8138 GRADIENT-BASED OPTIMIZATION OF PARAMETERIZED CAD GEOMETRIES
***Timothée Leblond**, Pierre Froment, Paul de Nazelle, Philippe Serré, Reda Sellakh, Gaël Chevallier*

8764 A COMPUTATIONAL STRATEGY FOR TRAJECTORY OPTIMIZATION OF UNDERACTUATED MULTIBODY SYSTEMS WITH CONTACTS
***Silvia Manara**, Alessio Artoni, Marco Gabiccini*

7293 OPTIMAL CONTROL OF PLANAR GEOMETRICALLY EXACT BEAM NETWORKS
Christoph Strohmeyer

Monday, June 6 **Room 22**
16:30-18:30

MS 902 - 2: INNOVATIVE NUMERICAL APPROACHES FOR MULTI-PHYSICS PROBLEMS
MS Organizers: Anna Pandolfi, Laurent Stainier, Kerstin Weinberg
Chair: Kerstin Weinberg

8442 A POROUS BRITTLE DAMAGE MATERIAL MODEL
***Anna Pandolfi**, Gabriele Della Vecchia, Maria Laura De Bellis, Michael Ortiz*

10956 ON THE STABILITY OF THE ELECTRODE INTERFACE DURING CHARGING IN LITHIUM BATTERIES
***Kerstin Weinberg**, Panagiotis Natsiavas, Michael Ortiz*

9784 VARIATIONAL MESH ADAPTION FOR THERMO-MECHANICAL PROBLEMS
***Rohit Pethe**, Thomas Heuze, Laurent Stainier*

6834 AN XFIELD METHOD FOR CRACK PROPAGATION IN BRITTLE ELASTIC MATERIALS
*Luca Formaggia, **Bianca Giovanardi**, Anna Scotti*

12303 REACTION FRONT PROPAGATION MODELING IN HETEROGENEOUS CONDENSED SYSTEMS
***Alberto Cuitino**, Yuriy Gulak*

9266 A NOVEL STABILITY CONDITION FOR THE FE DISCRETISATION OF POROELASTICITY MODEL
***Marco Favino**, Rolf Krause*

Monday, June 6 **Room 23**
16:30-18:50

MS 913 - 2: HIGH-ORDER METHODS FOR POLYGONAL AND POLYHEDRAL MESHES
MS Organizers: Lourenço Beirao da Veiga, Franco Brezzi, Donatella Marini, Alessandro Russo
Chair: Donatella Marini

6277 VIRTUAL ELEMENTS FOR THE STOKES PROBLEM
***Lourenco Beirao da Veiga**, Carlo Lovadina, Giuseppe Vacca*

4624 ADAPTIVE BEM-BASED FEM ON POLYGONAL MESHES FROM VIRTUAL ELEMENT METHODS
Steffen Weißer

7316 THE VIRTUAL ELEMENT METHOD FOR LARGE DEFORMATION CONTACT
*P. Wriggers, **W. T. Rust**, B. D. Reddy*

7979 DISCONTINUOUS GALERKIN METHODS FOR THE ELASTODYNAMICS EQUATION ON POLYGONAL AND POLYHEDRAL MESHES
***Paola F. Antonietti**, Ilario Mazzieri, Antonio Nicolo'*

8592 A STABLE VIRTUAL ELEMENT METHOD FOR THE DARCY EQUATIONS AND THE BRINKMAN EQUATIONS
*Lourenco Beirao da Veiga, Carlo Lovadina, **Giuseppe Vacca***

8706 BASIC PRINCIPLES OF HP VIRTUAL ELEMENT METHODS
*Lourenco Beirao da Veiga, Alexey Chernov, Lorenzo Mascotto, **Alessandro Russo***

6797 A NON-CONFORMING VIRTUAL ELEMENT METHOD FOR STOKES EQUATIONS
*Andrea Cangiani, **Vitaliy Gyrya**, Gianmarco Manzini*

TECHNICAL SESSIONS

Tuesday, June 7 **Zeus East**
8:30-10:30

MS 913 - 3: HIGH-ORDER METHODS FOR POLYGONAL AND POLYHEDRAL MESHES

MS Organizers: Lourenço Beirao da Veiga, Franco Brezzi, Donatella Marini, Alessandro Russo

Chair: Lourenço Beirao da Veiga

9048 **KEYNOTE:** SERENDIPITY H(DIV) AND H(CURL) CONFORMING VEMS
*Lourenco Beirao da Veiga, **Franco Brezzi**, Donatella Marini, Alessandro Russo*

6334 THE VIRTUAL ELEMENT METHOD FOR DISCRETE FRACTURE NETWORK FLOW AND TRANSPORT SIMULATIONS
*Matias Fernando Benedetto, **Stefano Berrone**, Andrea Borio, Sandra Pieraccini, Stefano Scialo`, Fabio Vicini*

9319 A VIRTUAL ELEMENT METHOD FOR THE ACOUSTIC VIBRATION PROBLEM
*Lourenco Beirao da Veiga, **David Mora**, Gonzalo Rivera, Rodolfo Rodríguez*

9535 A NEW VIRTUAL ELEMENT METHOD FOR 2D NONLINEAR INELASTIC APPLICATIONS
***Edoardo Artioli**, Lourenco Beirao da Veiga, Carlo Lovadina, Elio Sacco*

Tuesday, June 7 **Zeus North**
8:30-10:30

MS 906 - 3: MATHEMATICAL ADVANCES IN ISOGEOMETRIC ANALYSIS

MS Organizers: Annalisa Buffa, John A. Evans, Thomas J.R. Hughes, Giancarlo Sangalli

Chair: John A. Evans

11253 **KEYNOTE:** HIGH ORDER EXPLICIT STRUCTURAL DYNAMICS WITH ISOGEOMETRIC COLLOCATION
*Rene Hiemstra, Thomas JR Hughes, **Alessandro Reali***

6751 COMPUTATIONAL COMPARISON OF ADAPTIVE MESH REFINEMENT STRATEGIES IN ISOGEOMETRIC ANALYSIS
***Paul Hennig**, Markus Kästner, Philipp Morgenstern, Daniel Peterseim*

11330 MANIFOLD-BASED THIN-SHELLS FINITE ELEMENTS OF ARBITRARY ORDER AND SMOOTHNESS
***Musabbir Majeed**, Fehmi Cirak*

4488 ADAPTIVE INTEGRATION FOR ISOGEOMETRIC BOUNDARY ELEMENT ANALYSIS THROUGH NESTED CLENSHAW CURTIS QUADRATURE
***Robert Simpson**, Zhaowei Liu*

Tuesday, June 7 **Zeus West**
8:30-10:30

MS 609 - 3: ADVANCED COMPUTATIONAL MODELING OF BATTERIES AND FUEL CELLS

MS Organizers: Edwin Knobbe, Wolfgang A. Wall

Chair: Edwin Knobbe

5448 PPGDA/LIPF6 SOLID ELECTROLYTE ELECTROCHEMICAL AND MECHANICAL PROPERTIES AT GRAPHITIC INTERFACE
***Osvalds Verners**, Barend Thijsse, Angelo Simone*

9900 A THREE-DIMENSIONAL, THERMODYNAMIC, COUPLED MODEL FOR FULLY RESOLVED FINITE ELEMENT SIMULATIONS OF LITHIUM-ION BATTERIES
***Rui Fang**, Wolfgang A. Wall*

7160 MODELING OF NIXMNYCO1-X-Y (NMC) CATHODES OF HIGH-ENERGY AND HIGH-POWER CELLS WITH A TRANSMISSION LINE MODEL
***Janina Costard**, Moses Ender, Michael Weiss, Ellen Ivers-Tiffée*

8389 EFFECT OF MICROSTRUCTURE ON THERMAL CONDUCTIVITY OF LITHIUM-ION ELECTRODES VIA DEM SIMULATIONS
***Clara Sangrós Giménez**, Arno Kwade*

9100 MODELING OF LIFEPO4-ELECTRODES
*Wolfgang Dreyer, **Clemens Guhlke**, Manuel Landstorfer, Mario Maurelli, Rüdiger Müller, Paul Gajewski*

Tuesday, June 7 **Minos East**
8:30-10:30

MS 501 - 3: ALGORITHMIC ASPECTS OF HIGH-PERFORMANCE COMPUTING FOR MECHANICS AND PHYSICS

MS Organizers: Santiago Badia, Victor Calo, Javier Principe

Chair: Javier Principe

7789 INITIALIZATION OF PHASE-FIELD FRACTURE PROPAGATION IN POROUS MEDIA USING A PROBABILITY MAP OF FRACTURE NETWORK
Mary Wheeler

6770 EVALUATION OF THE PERFORMANCE OF SMOOTHERS FOR FULLY-COUPLED ALGEBRAIC MULTIGRID PRECONDITIONERS FOR IMPLICIT VARIATIONAL MULTISCALE FINITE ELEMENT RESISTIVE MAGNETOHYDRODYNAMICS
***Paul Lin**, John Shadid*

9123 STRONGLY PARALLEL METHODS FOR NUMERICAL SIMULATION IN NONLINEAR STRUCTURAL MECHANICS
***Camille Negrello**, Pierre Gosselet, Christian Rey*

9285 A NON-INTRUSIVE MULTI-SCALE STRATEGY FOR A MIXED DOMAIN DECOMPOSITION METHOD FOR CONTACT PROBLEMS
***Paul Oumaziz**, Pierre Gosselet, Pierre-Alain Boucard*

4478 PSEUDOMULTIGRID GAUSS–SEIDEL METHOD FOR LARGE SCALE AND HIGH PERFORMANCE COMPUTING
***Sergey Martynenko**, Vadim Volokhov, Pavel Toktaliev*

6541 PARALLELIZABLE EXPLICIT LOCAL TIME STEPPING FOR DISCONTINUOUS GALERKIN APPROXIMATIONS ON MOVING MESHES
Andrew Winters

Tuesday, June 7 **Minos North**
8:30-10:30

MS 301 - 1: METHODS FOR CUT AND COMPOSITE MESHES: THEORY, ALGORITHMS AND APPLICATIONS

MS Organizers: Mats G. Larson, André Massing
Chair: André Massing

5714 AN OPTIMIZATION-BASED APPROACH TO MESH TYING AND TRANSMISSION PROBLEMS
***Paul Kuberry**, Pavel Bochev*

7469 CONFORMAL HIGH-ORDER DISCRETIZATIONS FOR MULTIPHASE FLOW: CHOICE OF BASIS, PRECONDITIONING AND TEMPORAL DISCRETIZATION
Florian Kummer

8261 A SPACE-TIME CUT FINITE ELEMENT METHOD FOR CONVECTION-DIFFUSION PROBLEMS ON TIME DEPENDENT DOMAINS
*Peter Hansbo, Mats G. Larson, **Sara Zahedi***

4573 REMOVING THE STABILIZATION PARAMETER IN FITTED AND UNFITTED SYMMETRIC NITSCHE FORMULATIONS
***Christoph Lehrenfeld**, Arnold Reusken*

6043 INTERNODES (INTERPOLATION FOR NON-CONFORMING DECOMPOSITIONS): AN ACCURATE APPROACH FOR THE NUMERICAL SOLUTION OF PDES ON NONCONFORMING DISCRETIZATIONS
*Simone Deparis, Davide Forti, **Paola Gervasio**, Alfio Quarteroni*

Tuesday, June 7 **Minos South**
8:30-10:30

MS 503 - 3: HPC-BASED SIMULATIONS FOR THE ENGINEERING REALM AND INDUSTRIAL APPLICATIONS

MS Organizers: Makoto Tsubokura, Mariano Vázquez, Takayuki Aoki
Chair: Cristóbal Samaniego

10235 NUMERICAL ANALYSIS OF RADIO FREQUENCY BLACKOUT FOR ATMOSPHERIC REENTRY VEHICLE USING CFD-CEM COMBINED METHOD
***Yusuke Takahashi**, Reo Nakasato, Nobuyuki Oshima*

10763 SCALE DOWN OF A PRODUCTION (INDUSTRIAL) SCALE TABLET COATING PROCESS USING THE DISCRETE ELEMENT METHOD
***Peter Böhling**, Matthew Metzger, Brendon Ricart, Pavol Rajniak, Johannes Khinast*

10923 VALIDATION OF WALL-MODELED LES FOR HIGH REYNOLDS NUMBER FLOW
***Ken Uzawa**, Kenji Ono*

11146 DIRECT FEM LARGE SCALE COMPUTATION OF TURBULENT MULTIPHASE FLOW IN URBAN WATER SYSTEMS AND MARINE ENERGY
***Ezhilmathi Krishnasamy**, Johan Hoffman, Johan Jansson*

7928 LARGE-SCALE SIMULATIONS FOR FLUIDIZATION USING COUPLED LATTICE BOLTZMANN METHOD AND DISCRETE ELEMENT METHOD ON A GPU SUPERCOMPUTER
***Seiya Watanabe**, Takayuki Aoki, Yuta Hasegawa*

Tuesday, June 7 **Danae**
8:30-10:30

MS 1001 - 2: STRUCTURAL AND MULTIDISCIPLINARY OPTIMIZATION

MS Organizers: J.F. Aguilar Madeira, Helder C. Rodrigues
Chair: Erik Lund

8892 TOPOLOGY OPTIMIZATION OF CONTACT PROBLEMS BASED ON ALLEN CAHN APPROACH
Andrzej Myslinski

11024 TOPOLOGY OPTIMIZATION OF WAVE BARRIERS FOR RAILWAY INDUCED VIBRATIONS IN BUILDINGS
***Cédric Van hoorickx**, Mattias Schevenels, Geert Lombaert*

11861 TOPOLOGY OPTIMIZATION ON TRANSIENT HEAT TRANSFER PROBLEMS
Said Zeidan

8471 TOPOLOGY OPTIMIZATION USING A KRIGING-ASSISTED GENETIC ALGORITHM WITH A NOVEL LEVEL SET REPRESENTATION APPROACH
***Mitsuo Yoshimura**, Koji Shimoyama, Takashi Misaka, Shigeru Obayashi*

9574 ON THE OPTIMAL DESIGN OF CABLE-STAYED BRIDGES
*Gerardo Carpentieri, Mariano Modano, Francesco Fabbrocino, **Luciano Feo**, Fernando Fraternali*

Tuesday, June 7 **Europa**
8:30-10:30

CS 410 - 1: COMPUTATIONAL FLUID MECHANICS

Chair: Marcela Cruchaga

8221 NUMERICAL SIMULATION OF FLOWS INCLUDING RIGID BODIES WITH IMPOSED MOTION
*Felipe González, **Marcela Cruchaga**, Diego Celentano*

8621 NUMERICAL OPTIMISATION OF THE SUPERSONIC FLOW ACTING ON A CYLINDER IN A NOZZLE
***Akil Osman**, Joris Degroote, Jan Vierendeels*

10249 AN EXPERIMENTAL AND NUMERICAL STUDY ON THE PERFORMANCE OF AN INNOVATIVE VERTICAL-AXIS WIND TURBINE
***Katarzyna Kludzinska**, Krzysztof Tesch, Piotr Doerffer*

8825 VALIDATION OF A CFD MODEL WITH LIDAR-BASED WIND SCANNERS UPSTREAM OF A WIND TURBINE IN COMPLEX TERRAIN
***Alexander R. Meyer Forsting**, Niels Troldborg, Andreas Bechmann, Nikolas Angelou, Nikola Vasiljevic*

5207 HEAT RECOVERY BY CROSS FLOW
***Karel Adamek**, Jan Kolar, Pavel Peukert*

12025 APPLICATION OF BAY MODEL OF AIR-JER VORTEX GENERATOR IN TRANSONIC FLOW OVER V2C WING
***Tomasz Kwiatkowski**, Paweł Flaszynski*

Tuesday, June 7 **Leda**
8:30-10:30

MS 1101 - 3: REDUCED BASIS, POD AND PGD MODEL ORDER REDUCTION TECHNIQUES

MS Organizers: Francisco Chinesta, Elias Cueto, Antonio Huerta, Pierre Ladeveze, Gianluigi Rozza

Chair: Francisco Chinesta

5948 ADAPTIVE SIMULTANEOUS ADJUSTMENT OF POD AND DEIM BASIS
*Fabian Fritz, **Lihong Feng**, Michael Mangold, Peter Benner*

10431 AN APPROACH TO PREDICT GUST EFFECTS BY MEANS OF HYBRID ROM/CFD SIMULATIONS
*Michel Bergmann, **Andrea Ferrero**, Angelo Iollo, Haysam Telib*

11860 A PGD-BASED TIME SPACE DECOMPOSITION FOR THE UNSTEADY NAVIER-STOKES EQUATIONS APPLIED TO INCOMPRESSIBLE FLOWS
Michel Visonneau

7753 OPTIMAL LOCAL APPROXIMATION SPACES FOR COMPONENT-BASED STATIC CONDENSATION PROCEDURES
***Kathrin Smetana**, Anthony T Patera*

10145 SEISMIC STRUCTURAL PROBLEMS: DAMAGE PREDICTION AND ITS VARIABILITY THROUGH PGD MODELS
***Matthieu Vitse**, David Néron, Pierre-Alain Boucard*

Tuesday, June 7 **Athena**
8:30-10:30

MS 703 - 1: COMPUTATIONAL MECHANICS OF WOOD MATERIALS AND TIMBER STRUCTURES

MS Organizers: Josef Füssl, Josef Eberhardsteiner, Erik Serrano, Michael Kaliske

Chair: Josef Füssl

10674 FRACTURE NUCLEATION AND CONTINUED CRACK GROWTH ON THE CELL SCALE IN WOOD ANALYZED BY A HIGH-RESOLUTION FINITE ELEMENT MODEL
***Jenny Carlsson**, Per Isaksson*

9072 A COMBINED COMPUTATIONAL AND EXPERIMENTAL X-RAY CT MULTISCALE STUDY OF STABLE, SLOWLY GROWING CRACKS IN WOOD-FIBRE BASED COMPOSITE MATERIALS
***Thomas Joffre**, Kristoffer Segerholm, Cecilia Persson, Stig L. Bardage, Cris L. Luengo Hendriks, Per Isaksson*

10600 A NUMERICAL LIMIT ANALYSIS APPROACH FOR STRENGTH PREDICTIONS OF CLEAR WOOD TAKING MICROSTRUCTURAL CHARACTERISTICS INTO ACCOUNT
***Mingjing Li**, Josef Füssl, Markus Lukacevic, Josef Eberhardsteiner, Chris Martin*

5303 A CONTINUUM MICROMECHANICS APPROACH TO THE ELASTICITY OF PLANAR FIBER NETWORKS AND ITS APPLICATIONS TO PAPER MATERIALS
***Pedro Miguel J. S. Godinho**, Leopold Wagner, Viktoria Vass, Josef Eberhardsteiner, Christian Hellmich*

5480 APPLICATION OF A NOVEL FINITE ELEMENT METHOD-BASED MODEL TO EVALUATE FLEXURAL PROPERTIES OF ORIENTED STRAND BOARDS
***Hsien-Tsung Hu**, Feng-Cheng Chang*

Tuesday, June 7 **Artemis**
8:30-10:30

MS 903 - 3: ADVANCES IN FICTITIOUS DOMAIN METHODS FOR SOLID MECHANICS

MS Organizers: Alexander Düster, Ernst Rank, Stefan Kollmannsberger, Andreas Schröder

Chair: Stefan Kollmannsberger

11518 HIGHER-ORDER MULTI-RESOLUTION TOPOLOGY OPTIMIZATION USING THE FINITE CELL METHOD
***Jeroen Groen**, Martin Ruess, Matthijs Langelaar, Ole Sigmund*

6108 AUTOMATIC CONFORMAL DECOMPOSITION OF ELEMENTS CUT BY NURBS
***Jakob W. Steidl**, Thomas-Peter Fries*

4659 TOWARDS LATTICE-BOLTZMANN ON DYNAMICALLY ADAPTIVE GRIDS — MINIMALLY-INVASIVE GRID EXCHANGE IN ESPRESSO
***Michael Lahnert**, Carsten Burstedde, Christian Holm, Miriam Mehl, Georg Rempfer, Florian Weik*

8920 A DESIGN-THROUGH-ANALYSIS APPROACH USING THE FINITE CELL METHOD
***Benjamin Wassermann**, Tino Bog, Stefan Kollmannsberger, Ernst Rank*

Tuesday, June 7 **Aphrodite**
8:30-10:30

MS 921 - 3: RECENT ADVANCES IN BOUNDARY ELEMENT METHODS

MS Organizers: Gernot Beer, Luiz Wrobel, Martin Schan

Chair: Gernot Beer

6472 GREEN'S FUNCTION FOR THE EVALUATION OF ANCHOR LOSSES IN MEMS
***Attilio Frangi**, Massimiliano Cremonesi*

9175 NUMERICAL SIMULATION OF 3D HEAT CONDUCTION IN LAYERED MEDIA CONTAINING EMBEDDED CRACKS
***António Tadeu**, Catarina Serra, Nuno Simões*

7181 NUMERICAL SIMULATION OF GROUNDING GRIDS FOR UNDERGROUND ELECTRICAL SUBSTATIONS
***Raquel Guizán**, José París, Ignasi Colominas, Fermín Navarrina, Manuel Casteleiro*

7178 EFFICIENT BOUNDARY ELEMENT FORMULATION OF THERMOELASTICITY
***Relindis Rott**, Martin Schanz*

10989 BOUNDARY ELEMENT SIMULATION OF STRESS-STRAIN STATE AND VOLUMETRIC DAMAGEABILITY OF MULTIBODY TRIBO-FATIGUE SYSTEM
*Michael Zhuravkov, **Sergei Sherbakov**, Leonid Sosnovskiy*

9004 A MICROSTRUCTURAL ANALYSIS OF A DUCTILE CAST IRON GGG40 USING BEM
***Adrián Betancur**, Carla Anflor*

Tuesday, June 7 **Antigoni**
8:30-10:30

MS 806 - 1: MULTISCALE MODELLING OF MATERIALS AND STRUCTURES

MS Organizers: Tadeusz Burczyński, Xavier Oliver, Maciej Pietrzyk, Alfredo Huespe

Chair: Tadeusz Burczyński

7214 **KEYNOTE:** EFFECTIVE MESO AND MACRO PROPERTIES FOR FIBRE-REINFORCED-POLYMER CURING COUPLED TO VISCO-ELASTICITY
***Rolf Mahnken**, Christian Dammann*

6696 CRACK PATH FIELD AND STRAIN INJECTION TECHNIQUES IN DYNAMIC FRACTURE SIMULATIONS
***Oriol Lloberas-Valls**, Alfredo E. Huespe, Javier Oliver, Ivo F. Dias*

4728 THE KIRKENDALL SHIFT AND FRENKEL EFFECT DURING MULTI-COMPONENT DIFFUSION PROCESS
Bartek Wierzba

11260 COMPUTATIONAL MATERIAL DESIGN FOR ACOUSTIC CLOAKING
***Carlos Méndez**, Alfredo Huespe, Juan Manuel Podestá, Xavier Oliver*

10707 MODELING OF PHASE CHANGES IN MICRO-DOMAIN INDUCED BY AN ULTRASHORT LASER PULSE
***Ewa Majchrzak**, Lukasz Turchan, Jolanta Dziatkiewicz*

Tuesday, June 7 **Apollo East**
8:30-10:50

MS 106 - 1: DIRECT AND INVERSE METHODS FOR CARDIOVASCULAR AND PULMONARY BIOMECHANICS

MS Organizers: Wolfgang A. Wall, C. Alberto Figueroa, Marek Behr

Chair: Wolfgang A. Wall

8593 **KEYNOTE:** STRATEGIES FOR CARDIOVASCULAR AND RESPIRATORY MULTISCALE MODELING PARAMETRIZATION
Irene Vignon-Clementel

10895 HIGHER ORDER STABILIZED FINITE ELEMENT METHODS FOR CARDIOVASCULAR FLOW
***Kenneth Jansen**, Hyun Jin Kim*

5374 NUMERICAL SIMULATION OF STENT-GRAFT DEPLOYMENT IN PATIENT-SPECIFIC ABDOMINAL AORTIC ANEURYSM
***André Hemmler**, Michael W. Gee*

6961 3D COMPUTATIONS OF MUCOCILIARY CLEARANCE
***Robin Chatelin**, Dominique Anne-Archard, Philippe Poncet*

8179 ESTIMATION OF DIASTOLIC AND SYSTOLIC MYOCARDIAL PROPERTIES USING PATIENT-SPECIFIC MODELS OF THE HUMAN HEART
***Myrianthi Hadjicharalambous**, Liya Asner, Radomir Chabiniok, Jack Lee, David Nordsletten*

9043 BLOOD FLOW IN THE COMMON CAROTID ARTERY WITH STENOSIS
*Helena Henriques, **Luisa Sousa**, Catarina Castro, Carlos António, Rosa Santos, Pedro Castro, Elsa Azevedo*

Tuesday, June 7 **Apollo West**
8:30-10:30

MS 919 - 1: RECENT ADVANCES IN NUMERICAL SIMULATION AND ANALYSIS OF KINETIC MODELS

MS Organizers: E. Harald van Brummelen, Manuel Torrilhon

Chair: E. Harald van Brummelen

11336 NUMERICAL METHODS FOR MOMENT EQUATIONS ON COMPLEX GEOMETRIES
Manuel Torrilhon

5052 DETERMINISTIC AND STOCHASTIC MICRO-MACRO METHODS FOR KINETIC EQUATIONS
Giovanni Samaey

8305 AN IMPROVED FOURTEEN-MOMENT MODEL FOR RAREFIED-GAS AND MULTIPHASE-FLOW PREDICTION
***James McDonald**, Zakaria Ben Dhia*

9530 DISCRETE VELOCITY MODELS: A STUDY OF THE HYDRODYNAMIC LIMIT
Hans Babovsky

8397 MOMENT CLOSURE APPROXIMATIONS OF THE BOLTZMANN EQUATION BASED ON PHI-DIVERGENCES
***Michael Abdelmalik**, Harald van Brummelen*

Tuesday, June 7 **Room 1**
8:30-10:30

MS 1202 - 1: ADVANCED BEAM MODELS

MS Organizers: Dinar Camotim, Zuzana Dimitrovová, Rodrigo Gonçalves

Chair: Dinar Camotim, Zuzana Dimitrovová

11449 FIRST-ORDER DISPLACEMENT-BASED ZIGZAG THEORIES FOR COMPOSITE LAMINATES AND SANDWICH STRUCTURES: A REVIEW
Marco Di Sciuva

5439 A COMPUTATIONALLY EFFECTIVE APPROACH TO FINITE ROTATIONS - SMALL STRAINS DESCRIPTION OF BEAM ELEMENTS
Salvatore Lopez

9395 STATIC SOLUTION FOR THE VIBRATION FREQUENCIES OF AXIALLY LOADED BEAMS
Moshe Eisenberger

9035 3D BEAM-COLUMN FINITE ELEMENT UNDER NON-UNIFORM SHEAR STRESS DISTRIBUTION DUE TO SHEAR AND TORSION
***Paolo Di Re**, Daniela Addessi, Filip C. Filippou*

9396 PHASE FIELD MODELING OF BRITTLE FRACTURE IN AN EULER-BERNOULLI BEAM
***Jian Gao**, Yihuan Li, Marino Arroyo, Yongxing Shen*

Tuesday, June 7 **Room 2**
8:30-10:30

CS 420 - 3: MULTI-PHASE AND CHEMICALLY REACTING FLOWS

Chair: Aromal Vasavan

12015 HIGHER ORDER CORRECTION OF PROGRESS VARIABLE SOURCE TERM IN FLAMELET GENERATED MANIFOLDS (FGM) APPROACH FOR MODELING STRAINED 1D COUNTERFLOW FLAMES
***Aromal Vasavan**, Philip de Goey, Jeroen van Oijen*

6101 NUMERICAL SIMULATION OF HEAT AND MASS TRANSFER PROCESSES IN LARGE-SCALE FLUIDIZED BED COMPLEX STRUCTURE APPARATUS AS AN EXAMPLE OF THE REACTOR OF ISOPARAFFINS DEHYDROGENATION
***Sergei Solovev**, Svetlana Egorova, Alexander Lamberov, Olga Soloveva*

7549 SHOCK CAPTURING COMPUTATIONS WITH STABILIZED POWELL-SABIN ELEMENTS
***Giorgio Giorgiani**, Herve Guillard, Boniface Nkonga*

9056 MULTIPHASE FLOW IN POROUS MEDIA USING CFD
***Casper Schytte Hemmingsen**, Jens Honore Walther*

9387 LARGE EDDY SIMULATION OF TURBULENT COMPRESSIBLE FLOWS USING THE CHARACTERISTIC-BASED SPLIT SCHEME AND MESH ADAPTATION
***Renato Linn**, Armando Awruch*

Tuesday, June 7 **Room 3**
8:30-10:30

MS 306: LATTICE SPRING METHODS FOR LINEAR AND NONLINEAR CONTINUA
MS Organizers: Ioannis Doltsinis
Chair: Ioannis Doltsinis, Vitor Dias da Silva

16560 **KEYNOTE:** ARGYRI'S NATURAL APPROACH RELATED TO DEFORMABLE CONTINUA AND SPRING LATTICE MODELS
Ioannis Doltsinis

6268 PROPERTIES OF NONLINEAR NORMAL SPRING LATTICES REGARDING STABILITY AND MECHANICAL BEHAVIOUR
Rafael D. Jarzabek

6447 LATTICE SPRING MODELS IN TWO AND THREE DIMENSIONS FOR ARBITRARY MESHES
Michael Reck

10948 WAVE TRANSMISSION THROUGH NONLINEAR IMPACTING METAMATERIAL UNIT
*Arnab Banerjee, **Raj Das**, Emilio Calius*

7740 GENERATING TRIANGULAR LATTICES FOR SURFACES WITH IRREGULAR BOUNDARY
*Tatiana Sá Marques, **Vitor Dias da Silva***

Tuesday, June 7 **Room 4**
8:30-10:30

CS 212 - 1: NUMERICAL MODELING OF DAMAGE, FAILURE AND FRACTURE
Chair: Yulia Pronina

9674 NEW BENCHMARK FOR THE LIFE ASSESSMENT OF A THIN-WALLED PIPE SUBJECTED TO STRESS ASSISTED CORROSION
***Yulia Pronina**, Elena Sedova*

8157 RELIABILITY ANALYSIS IN FRACTURE MECHANICS ACCORDING TO COMBINED FAILURE CRITERIA
***Rudy Chocat**, Paul Beaucaire, Loïc Debeugny ,Jean-Pierre Lefebvre, Caroline Sainvitu, Piotr Breitkopf, Eric Wyart*

9555 FORMULATION AND IMPLEMENTATION OF AN ORTHOTROPIC CONSTITUTIVE MODEL FOR COUPLED ELASTOPLASTIC-DAMAGE
***Swaroop Gaddikere Nagaraja**, Clara Schuecker*

5807 MODELING CREEP BEHAVIOR OF SEMICRYSTALLINE THERMOPLASTICS CONSIDERING CYCLIC UNLOADING
***Patrick Zerbe**, Benjamin Schneider, Michael Kaliske*

9961 MODELLING THERMAL BARRIER COATINGS AND THEIR INFLUENCE ON THE LIFETIME OF ROCKET ENGINE NOZZLE STRUCTURES
***Marek Fassin**, Stephan Wulfinghoff, Stefanie Reese*

Tuesday, June 7 **Room 5**
8:30-10:30

CS 460 - 1: UNSTEADY FLOW COMPUTATION
Chair: Arthur Veldman

8136 FREE-SURFACE FLOW SIMULATIONS FOR MOORED AND FLOATING OFFSHORE PLATFORMS
***Arthur Veldman**, Roel Luppes, Peter van der Plas, Henri van der Heiden, Bulent Duz, Wybe Rozema, Henk Seubers, Joop Helder, Tim Bunnik, Rene Huijsmans*

5441 REDUCED ORDER MODELLING OF GUST ANALYSIS USING COMPUTATIONAL FLUID DYNAMICS
***Reik Thormann**, Philipp Bekemeyer, Sebastian Timme*

7604 PERFORMANCE AND WAKE DEVELOPMENT OF VERTICAL AXIS WIND TURBINES: A LES STUDY USING A VORTEX PARTICLE-MESH METHOD
***Matthieu Duponcheel**, Gregoire Winckelmans, Philippe Chatelain*

7541 INVESTIGATION OF A MODERN & HYBRID TURBULENCE MODELLING APPROACH FOR TRANSIENT AUTOMOTIVE AERODYNAMICS SIMULATIONS
***Rene Devaradja**, Petr Simanek, Jacques Papper, Pavla Policka*

9777 MODELLING OF UNSTEADY SECONDARY VORTICES GENERATED BEHIND THE RADIAL GAP OF THE AXIAL TURBINE BLADE WHEEL
Petr Straka

Tuesday, June 7 **Room 7**
8:30-10:30

MS 1214 - 1: HISTORIC MASONRY STRUCTURES: MODELLING, ASSESSMENT & RETROFIT
MS Organizers: Panagiotis Asteris, Charilaos Maniatakis, Constantine Spyrakos
Chair: Constantine Spyrakos

15540 **KEYNOTE:** SEISMIC PROTECTION OF MONUMENTS AND HISTORIC STRUCTURES – THE SEISMO RESEARCH PROJECT
***Constantine Spyrakos**, Charilaos Maniatakis*

11138 NATIVITY CHURCH IN BETHLEHEM: FULL 3D NON-LINEAR FE APPROACH FOR STRUCTURAL DAMAGE PREDICTION
***Gabriele Milani**, Marco Valente, Claudio Alessandri*

11134 SEISMIC ASSESSMENT OF HISTORICAL MASONRY TOWERS IN THE NORTH-EAST REGION OF ITALY
*Marco Valente, **Gabriele Milani***

11242 DYNAMIC BEHAVIOUR AND EARTHQUAKE PERFORMANCE OF GREEK BASILICA CHURCHES WITH FOUNDATION DEFORMABILITY
George Manos, Evaggelos Kozikopoulos, Lambros Kotoulas

11342 PROBLEMS RELATED TO THE USE OF FIBER REINFORCED CEMENTITIOUS MATERIALS AS STRENGTHENING OF MASONRY MEMBERS
*Daniela Sinicropi, Antonio Borri, **Marco Corradi**, Michele Paradiso*

Tuesday, June 7 **Room 8**
8:30-10:30

CS 110 - 3: NUMERICAL MODELS IN BIOMECHANICS
Chair: Julia Mikhal

11174 RELIABILITY OF FLOW PREDICTIONS IN CEREBRAL ANEURYSMS
***Julia Mikhal**, Meindert de Groot, Bernard Geurts*

10867 CRIMSON: TOWARDS A SOFTWARE ENVIRONMENT FOR PATIENT-SPECIFIC BLOOD FLOW SIMULATION FOR DIAGNOSIS AND TREATMENT
***Rostislav Khlebnikov**, C. Alberto Figueroa*

10012 PASSIVE-ACTIVE MECHANICAL RESPONSE OF ARTERIAL WALLS UTILIZING ANISOTROPIC HIGH-ORDER FINITE ELEMENTS
***Omid Sepahi**, Lars Radtke, Sebastian Eike Debus, Alexander Düster*

11537 INFLUENCE OF ANESTHESIA, LOCOMOTOR ACTIVITY AND COMPUTATIONAL METHOD ON CALCULATED SHEAR STRESS PATTERNS IN THE CAROTID BIFURCATION OF MICE
*David De Wilde, Bram Trachet, Guido De Meyer, **Patrick Segers***

8651 A PRECONDITIONER FOR THE FINITE ELEMENT APPROXIMATION TO THE LINEAR VISCOELASTIC WAVE EQUATION
***Maximilian Balmus**, Ralph Sinkus, David Kay, David A. Nordsletten*

7920 SOLVING THE INVERSE PROBLEM OF ESTIMATING FUZZY VISCOELASTIC CONSTITUTIVE PARAMET ERS
***Ruifei Peng**, Haitian Yang*

Tuesday, June 7 **Room 9**
8:30-10:30

CS 750 - 3: COMPUTATIONAL MODELING OF COMPOSITES
Chair: Christine Espinosa

4523 THERMAL BUCKLING BEHAVIOR OF FUNCTIONALLY GRADED MATERIALS
*Seok-in Bae, **Ji-Hwan Kim***

4621 NUMERICAL ANALYSIS OF SANDWICH PANELS SUBJECTED TO POINT LOADS
*Zbigniew Pozorski, **Jolanta Pozorska***

11552 STABILIZATION OF THE NUMERICAL PRIMING TO STABILIZATION PHENOMENON IN THE CRUSHING OF A COMPOSITE PANEL USING LOCAL AND DIFFUSE DAMAGE LAWS
*Floran Tostain, **Christine Espinosa**, Samuel Rivallant*

4634 THE INFLUENCE OF OPENINGS ON THE STRUCTURAL BEHAVIOR OF SANDWICH PANELS WITH NON-ISOTROPIC CORES
***Monika Chuda-Kowalska**, Michal Malendowski, Zbigniew Pozorski*

9643 NUMERICAL SIMULATION OF MECHANICAL BEHAVIOR OF WOVEN COMPOSITE AT DIFFERENT STRAIN RATE BY A COLLABORATIVE ELASTO-PLASTO-DAMAGE MODEL WITH FRACTIONAL DERIVATIVES
***Alina Krasnobrizha**, Patrick Rozycki, Laurent Gornet, Pascal Cosson*

Tuesday, June 7 **Room 10**
8:30-10:30

CS 1200 - 1: STRUCTURAL DYNAMICS
Chair: Ali Abbas

8455 FE MODELLING OF SFRC BEAMS UNDER IMPACT LOADS
*Pegah Behinaein, **Ali Abbas**, Demetris Cotsovos*

6969 NONLINEAR FORCED RESPONSE OF A STATOR VANE WITH MULTIPLE FRICTION CONTACTS USING A COUPLED STATIC/DYNAMIC APPROACH
***Marco Lassalle**, Christian Maria Firrone*

10452 AN APROXIMATE ANALYTICAL SOLUTION FOR NONLINEAR FGM SHELL STRUCTURE WITH VARIABLE IN TIME PARAMETERS
*Victor Gristchak, **Yuliia Fatieieva***

11458 MAGNETIC-STRUNG NES WITH ENERGY HARVESTING: THEORETICAL AND EXPERIMENTAL STUDY OF A NEW CONCEPT OF NONLINEAR VIBRATIONS ABSORBER.
***Giuseppe Pennisi**, Brian Mann, Cyrille Stephan, Guilhem Michon*

6753 STRUCTURAL DYNAMIC ANALYSIS OF OFFSHORE WIND TURBINES WITH JACKET FOUNDATIONS.
***Iván Couceiro**, José París, Fermín Navarrina, Ignasi Colominas, Manuel Casteleiro*

Tuesday, June 7 **Room 11**
8:30-10:50

MS 1309 - 2: SCALABLE MULTI-FIDELITY MODELING FOR DESIGN, UNCERTAINTY QUANTIFICATION, AND INVERSE PROBLEMS
MS Organizers: Paris Perdikaris, George Em. Karniadakis
Chair: Paris Perdikaris

9308 MULTI-FIDELITY INFORMATION FUSION ALGORITHMS FOR QUANTIFYING UNCERTAINTY IN HIGH-DIMENSIONAL SYSTEMS
***Paris Perdikaris**, George Em Karniadakis*

7145 MULTI-FIDELITY, MODEL-BASED STOCHASTIC OPTIMIZATION: APPLICATIONS IN RANDOM MEDIA.
Constantin Grigo

6117 VARIABLE FIDELITY MODELLING IN MODERN AIRCRAFT DESIGN
Marian Zastawny

MS 1310: COMPUTATIONAL METHODS FOR THE SOLUTION OF STOCHASTIC DIFFERENTIAL EQUATIONS
MS Organizers: Jianbing Chen, Ioannis Kougioumtzoglou, Vissarion Papadopoulos
Chair: Vissarion Papadopoulos

7244 FOUR-DIMENSIONAL PATH INTEGRATION METHOD FOR ESTIMATING THE STOCHASTIC ROLL RESPONSE
*Wei Chai, Arvid Naess, **Bernt Leira***

11344 SEISMIC RELIABILITY ASSESSMENT OF FRAME STRUCTURES WITH FLEXIBILITY-BASED STOCHASTIC BEAM-COLUMN ELEMENTS
***Georgios Balokas**, Michalis Fragiadakis*

11561 MULTISCALE OPTIMIZATION OF A CARBON NANOTUBE/POLYMER STRUCTURE
*Vissarion Papadopoulos, **Maria Tavlaki**, Odysseas Kokkinos*

12039 PROBABILITY DENSITY EVOLUTION METHOD FOR BUCKLING ANALYSIS OF STOCHASTIC SYSTEMS
*Vissarion Papadopoulos, **Ioannis Kalogeris***

Tuesday, June 7 **Room 12**
8:30-10:30

MS 1206 - 1: ADVANCES IN NUMERICAL METHODS FOR LINEAR AND NON-LINEAR DYNAMICS AND WAVE PROPAGATION

MS Organizer: Alexander Idesman
Chair: Alexander Idesman

4926 **KEYNOTE:** REDUCTION OF NUMERICAL DISPERSION FOR WAVE PROPAGATION PROBLEMS. APPLICATION TO ISOGEOMETRIC ELEMENTS AND FINITE ELEMENTS.
Alexander Idesman

5134 NONLINEAR FREQUENCY ANALYSIS FOR FEM
Oliver Weeger, ***Utz Wever****, Bernd Simeon*

6813 LAGRANGIAN AND SEMI-LAGRANGIAN GALERKIN METHODS FOR FREE SURFACE PROBLEMS
Marta Benítez*, Alfredo Bermúdez*

7711 SCALABLE SOLUTION OF THE LINEAR DYNAMICS PROBLEMS IN THE FREQENCY DOMAIN
Mikhail Belyi*, Vladimir Belsky, Andrey Larionov, Mintae Kim*

10298 A VOLUME-AGGLOMERATION MULTIRATE TIME ADVANCING APPROACH
Emmanuelle Itam*, Stephen Wornom, Bruno Koobus, Alain Dervieux*

Tuesday, June 7 **Room 15**
8:30-10:30

CS 930 - 3: HIGH-ORDER DISCRETIZATION METHODS

Chair: Andrea Crivellini

8104 HYBRID OPENMP/MPI PARALLELIZATION OF A HIGH–ORDER DISCONTINUOUS GALERKIN CFD SOLVER
Francesco Bassi, Alessandro Colombo, ***Andrea Crivellini****, Matteo Franciolini*

11312 MIMETIC SPECTRAL ELEMENT METHOD FOR GENERALIZED WAVES
Sanna Mönkölä*, Sami Kähkönen*

6755 ADAPTIVE POST-PROCESSING METHOD TO REPRESENT HIGH-ORDER NUMERICAL SOLUTIONS
Pol-André Haas, ***Vincent Mouysset****, Sébastien Pernet*

7537 ON THE INDUSTRIALIZATION OF HIGH-ORDER FEM FOR COMPUTATIONAL ACOUSTICS
Hadrien Beriot*, Gwénaël Gabard*

9251 COMPARISON OF FINITE VOLUME HIGH-ORDER SCHEMES FOR THE 2D EULER EQUATIONS
Jens Wellner

9281 NURBS-BASED ISOGEOMETRIC ANALYSIS FOR BALLISTIC EVALUATION OF TITANIUM PLATES
Mattia Montanari*, Petros Siegkas, Antonio Pellegrino, Nik Petrinic*

Tuesday, June 7 **Room 23**
8:30-10:30

CS 1020 - 3: EVOLUTIONARY AND DETERMINISTIC METHODS FOR DESIGN, OPTIMIZATION AND CONTROL

Chair: Kazuhisa Chiba

6360 MANIFESTATION OF ASCENDANCY OF EXTINCTION-REIGNITION ON SOUNDING HYBRID ROCKET USING DESIGN INFORMATICS
Kazuhisa Chiba*, Masahiro Kanazaki, Toru Shimada*

8395 OPTIMIZATION AND KNOWLEDGE DISCOVERY OF AIRCRAFT'S TRAJECTORY DURING LANDING APPROACH BASED ON TIME-SERIES FLIGHT EVALUATION
Masahiro Kanazaki*, Norazila Othman*

10045 COUPLING FLOW SIMULATION AND TOPOLOGY OPTIMIZATION FOR FIBER-REINFORCED PLASTICS
Markus Spadinger*, Albert Albers*

8123 GRADIENT-BASED OPTIMAL SHAPE DESIGN REGARDING VIBRATION CRITERIA
Sarah Julisson*, Christian Fourcade, Paul de Nazelle, Laurent Dumas*

6548 TOWARDS THE OPTIMIZATION OF WINGLETS FOR H-DARRIEUS ROTORS: PARAMETERIZATION AND AUTOMATIZATION FOR PERFORMANCE EVALUATION BASED ON 3D-URANS
László Daróczy*, Gábor Janiga, Dominique Thévenin*

8228 AN EXAMPLE OF COLUMN DESIGN OPTIMIZATION FOR FAILURE MODE CONTROL OF REINFORCED CONCRETE FRAMES
Roberta Muscati

Tuesday, June 7 **Room 18**
8:30-10:30

STS 2 - 1: GREEN AND SMART INTELLIGENT TRANSPORT SYSTEMS (IST): TOWARDS MORE INTEGRATED COMPUTATIONAL AND IT TOOLS FOR THE DEPLOYMENT OF NOVEL TRAVEL SERVICES

STS Organizers: Pedro Diez, P. Neittaanmaki, T. Tuovinen, Jacques Periaux
Chair: Jacques Periaux, Pedro Diez

14302 EUROPEAN COMPUTATIONAL TRANSPORT RESEARCH ACTIVITIES
Michael Kyriakopoulos

14305 DRAG REDUCTION VIA TURBULENT BOUNDARY LAYER FLOW CONTROL AN INTERNATIONAL COOPERATION IN AERONAUTICS WITH CHINA
Adel Abbas*, Eusebio Valero*

14309 THE KEY SUCCESS FACTORS IN FUTURE LOGISTICS
Olli Bräysy

14311 NUMERICAL MODELING OF BALLASTED RAILWAY TRACKS: STOCHASTIC CONTINUUM MODEL OF A GRANULAR MEDIUM, LOCALIZATION AND VIBRATIONS IN THE ENVIRONMENT
Regis Cottereau

14319 MODELING RESISTANCE SPOT WELD FAILURE IN MARTENSITIC BORON STEELS USING A CRITICAL J-INTEGRAL FRACTURE CRITERION
Daniel Dorribo Dorribo, ***Pedro Díez****, Lars Greve, Irene Arias, Xabier Larráyoz Izcara*

Tuesday, June 7 **Room 20**
8:30-10:30

MS 115 - 1: TUMOR GROWTH MODELING AND THE MECHANICAL ASPECTS OF CANCER

MS Organizers: Hector Gomez, Assad Oberai, Krishna Garikipati, Kristen Mills, Thomas J.R. Hughes

Chair: Kristen Mills

8872 PHASE-FIELD MODELING OF COUPLED TUMOR GROWTH AND ANGIOGENESIS
Jiangping Xu, Guillermo Vilanova, ***Héctor Gómez***

11819 MATHEMATICAL MODELING OF INTRAPERITONEAL DRUG DELIVERY
Margo Steuperaert*, Giuseppe Falvo D'Urso Labate, Charlotte Debbaut, Wim Ceelen, Patrick Segers*

8012 A REDUCED ORDER MODEL FOR NONLINEAR BIOLOGICAL TISSUES: AN APPLICATION TO SIMULATION OF BRAIN TUMOR GROWTHS
Domenico Borzacchiello*, Siamak Niroomandi, Cyril Petibois, Elias Cueto, Francisco Chinesta*

10583 CONTRIBUTION OF CELL-COLLAGEN FIBRE MECHANICAL INTERPLAY TO INTRATUMOURAL SOLID STRESS BUILD-UP AND IMPLICATIONS FOR TUMOUR GROWTH
Athanassios Pirentis*, Sandra Loerakker, Triantafyllos Stylianopoulos*

11755 EXPERIMENTAL AND MODELING STUDIES ON THE EFFECTS OF PHYSICAL FORCES AND CELL SHAPE ON TUMOR GROWTH
Kristen Mills*, Padmini Rangamani, Krishna Garikipati*

12118 A PARAMETRIC STUDY OF A MULTIPHASE POROUS MEDIA MODEL FOR TUMOR SPHEROIDS AND ENVIRONMENT INTERACTIONS
P. Mascheroni, ***Daniela P. Boso****, C. Stigliano, M. Carfagna, L. Preziosi, P. Decuzzi, B.A. Schrefler*

Tuesday, June 7 **Room 21**
8:30-10:30

CS 1010 - 3: COMPUTATIONAL INVERSE PROBLEMS AND OPTIMIZATION

Chair: Jan Liedmann

9911 OPTIMISATION OF STRUCTURES WITH INELASTIC DEFORMATIONS
Jan Liedmann*, Franz-Joseph Barthold*

7325 MATERIAL OPTIMIZATION OF NANOPARTICLES WITH REPECT TO THEIR OPTICAL PROPERTIES
Lukas Pflug*, Johannes Semmler, Michael Stingl, Günter Leugering*

7391 NUMERICAL SHAPE OPTIMIZATION OF NANOSCALE STRUCTURES IN ELECTROMAGNETIC APPLICATIONS
Johannes Semmler*, Lukas Pflug, Michael Stingl, Günter Leugering*

7601 GEARBOX DESIGN VIA MIXED-INTEGER PROGRAMMING
Bastian Dörig, ***Thorsten Ederer****, Peter F. Pelz, Marc E. Pfetsch, Jan Wolf*

9831 EFFICIENT VARIATIONAL SENSITIVITY ANALYSIS FOR STRUCTURAL OPTIMISATION OF MULTISCALE PROBLEMS
Wojciech Kijanski*, Franz-Joseph Barthold*

9416 ANALYSIS OF NON-LINEAR ENVIRONMENTAL LOAD COMBINATIONS BY EXTENDED CONTOUR-LINE ALGORITHMS
Bernt Leira

Tuesday, June 7 **Room 22**
8:30-10:30

CS 940 - 1: EXTENDED DISCRETIZATION METHODS

Chair: Wilhelm J.H. Rust

10132 XFEM ANALYSIS – INCLUDING BUCKLING – OF COMPOSITE SHELLS CONTAINING DELAMINATION
Wilhelm J.H. Rust*, Saleh Yazdani, Peter Wriggers*

11798 EFFICIENT SIMULATION OF ACOUSTIC WAVE PROPAGATION BY DISCRETE EXTERIOR CALCULUS
Tytti Saksa

8841 BEYOND RITZ-GALERKIN: FINITE ELEMENT APPROXIMATIONS ON A MANIFOLD IN THE CONFIGURATION SPACE
Christian Schröppel*, Jens Wackerfuß*

6483 METHODOLOGY OF COMBINED APPLICATION OF DIRECTIONAL DERIVATIVES AND THE EXTENDED FINITE ELEMENT METHOD (X-FEM) FOR SOLVING VIBRATION EIGENVALUE PROBLEMS
Daria Serbichenko*, Pascal Cosson, Patrick Rozycki*

5324 THE USE OF ENRICHED BASE FUNCTIONS IN THE THREE-DIMENSIONAL SCALED BOUNDARY FINITE ELEMENT METHOD
Sascha Hell*, Wilfried Becker*

Tuesday, June 7 **Room 23**
8:30-10:30

MS 1305: STOCHASTIC MODELS OF FAILURE IN RANDOM HETEROGENEOUS MATERIALS AND COMPLEX NETWORKS

MS Organizers: Dionissios T. Hristopulos, Tetsu Uesaka

Chair: Dionissios T. Hristopulos

10261 EXTREME VALUE DISTRIBUTIONS WITH HEAVY TAILS FOR FINITE-SIZE SYSTEMS
Dionissios Hristopulos

4816 STATISTICAL PROPERTIES OF STRENGTH FROM STATISTICAL MECHANICS
Mikko Alava

8671 STATISTICAL FAILURE OF FIBRE NETWORK UNDER CREEP CONDITION
Amanda Mattsson*, Tetsu Uesaka*

12124 CONSOLIDATION OF SOIL WITH STOCHASTIC PROPERTIES
Theofilos-Ioannis Manitaras*, Manolis Papadrakakis*

5533 HYDROFRACTURE OF ANISOTROPIC AND HETEROGENEOUS SHALE LAYERS
Michael Marder

10:30-11:00
Coffee Break

SEMI-PLENARY LECTURES

Tuesday, June 7 **Zeus East**
11:00-13:00

Chair: Kyriakos C. Giannakoglou

13266 THE DAWNING OF THE AGE OF FRACTIONAL MODELING IN COMPUTATIONAL SCIENCE AND ENGINEERING
George Karniadakis

12401 PROS AND CONS OF SELECTED MIXED GALERKIN AND LEAST-SQUARES FINITE ELEMENT FORMULATIONS
Jörg Schröder*, Karl Steeger, Nils Viebahn*

12264 HEAT AND MASS TRANSFER IN TURBULENT FLOW
Bernard Geurts

Tuesday, June 7 **Zeus North**
11:00-13:00

Chair: Carlos Felippa

12149 MODELING AND SIMULATION CHALLENGES IN MATERIALS DESIGN FOR ADDITIVE MANUFACTURING APPLICATIONS
Wing Kam Liu

12460 MODELING OF CARBON NANO MATERIALS
Kim Meow Liew*, Lu-Wen Zhang*

12300 PERSPECTIVES AND REQUIREMENTS OF NUMERICAL SIMULATION FOR FUTURE AIRCRAFT DESIGN
Cord-Christian Rossow*, Norbert Kroll*

Tuesday, June 7 **Zeus West**
11:00-13:00

Chair: Olivier Allix

16549 CUTFEM AND CUTIGA: DISCRETIZING GEOMETRY AND PARTIAL DIFFERENTIAL EQUATIONS
Mats G. Larson

12302 HIGH ORDER FICTITIOUS DOMAIN METHODS – HIGH FIDELITY SIMULATION FOR COMPLEX SOLID MODELS
Ernst Rank

15508 HYBRID HIERARCHICAL CONCEPTS FOR LARGE SCALE SIMULATIONS
Barbara Wohlmuth

Tuesday, June 7 **Minos East**
11:00-13:00

Chair: Isaac Harari

12145 HETEROGENEOUS ASYNCHRONOUS TIME INTEGRATORS FOR COMPUTATIONAL STRUCTURAL DYNAMICS
Anthony Gravouil

5795 NONPARAMETRIC PROBABILISTIC APPROACH OF MODEL UNCERTAINTIES INTRODUCED BY A PROJECTION-BASED NONLINEAR REDUCED-ORDER MODEL
Christian Soize*, Charbel Farhat*

12410 A NEW TOPOLOGY OPTIMIZATION METHOD AND ITS APPLICATION TO INNOVATIVE STRUCTURE AND MATERIAL DESIGNS
Shinji Nishiwaki*, Takayuki Yamada, Kazuhiro Izui*

13:00-14:30
Lunch Break

TECHNICAL SESSIONS

Tuesday, June 7 **Zeus East**
14:30-16:30

MS 105 - 1: SIMULATION OF CARDIOVASCULAR PROCEDURES AND DEVICES

MS Organizers: Ferdinando Auricchio, Michele Conti, Simone Morganti, Alessandro Reali, Alessandro Veneziani

Chair: Alexander Popp

6413 **KEYNOTE:** BOTTOM-UP MODELING OF AAA STENT GRAFTS AND STENT PLACEMENT PROCEDURES
***Alexander Popp**, Marie Oshima*

11945 SUTURE-TYPE AFFECTS THE HAEMODYNAMIC PERFORMANCE OF AORTIC VALVE SUBSTITUTES
***Claudio Capelli**, E. Sauvage, C. Corsini, S. Schievano, M. Andreas, G. Burriesci, C. Rath*

7812 FLUID–STRUCTURE INTERACTION ANALYSIS OF PATIENT-SPECIFIC HEART VALVES
*Fei Xu, **Michael Cheng-Hao Wu**, Ming-Chen Hsu, Simone Morganti, Alessandro Reali, Ferdinando Auricchio, Josef Kiendl, David Kamensky*

8702 SIMULATING ASCENDING AORTA ENDOGRAFTING IN A DYNAMIC HEART MODEL
***Jakub Kwiecinski**, Zhong You, Raman Uberoi*

Tuesday, June 7 **Zeus North**
14:30-16:30

MS 901 - 1: ISOGEOMETRIC METHODS

MS Organizers: Yuri Bazilevs, David J. Benson, Rene De Borst, Thomas J.R. Hughes, Trond Kvamsdal, Alessandro Reali, Giancarlo Sangalli, Clemens V. Verhoosel

Chair: Thomas J.R. Hughes

9994 **KEYNOTE:** HIERARCHIC ISOGEOMETRIC GEOMETRICALLY LINEAR AND NONLINEAR SHELL ELEMENTS
*Bastian Oesterle, **Ekkehard Ramm**, Manfred Bischoff*

6345 COMPUTATIONAL ASPECTS OF MORPHOLOGICAL INSTABILITIES USING ISOGEOMETRIC ANALYSIS
***Berkin Dortdivanlioglu**, Ali Javili, Christian Linder*

7488 ON DUAL BASIS FUNCTIONS FOR THE ISOGEOMETRIC MORTAR METHOD
***Wolfgang Dornisch**, Ralf Müller*

9877 LOCKING FREE ISOGEOMETRIC STRUCTURAL ELEMENTS PRESERVING SPARSITY OF STIFFNESS MATRICES
***Bastian Oesterle**, Ekkehard Ramm, Manfred Bischoff*

10902 G^1 POLAR SPLINE PATCHES
***Deepesh Toshniwal**, Hendrik Speleers, Thomas J R Hughes*

Tuesday, June 7 **Zeus West**
14:30-16:30

MS 112 - 1: ANEURYSMS: SOLID MECHANICS, FLUID MECHANICS, AND MECHANOBIOLOGY

MS Organizers: Christian J. Cyron, Sven Hirsch, Philippe Bijlenga, Roland C. Aydin, Anne M. Robertson, Gerhard A. Holzapfel

Chair: Christian J. Cyron, Gerhard A. Holzapfel

7548 **KEYNOTE:** A BIOCHEMOMECHANICAL ROLE OF THROMBUS IN ABDOMINAL AORTIC ANEURYSMS
*Paolo Di Achille, John Wilson, Lana Virag, Igor Karsaj, **Jay Humphrey***

9021 RELATIVE ROLES OF MECHANICS AND BIOCHEMISTRY IN THE INITIATION AND PROGRESSION OF CEREBRAL ANEURYSM THROMBOSIS
***Malebogo Ngoepe**, Yiannis Ventikos*

9034 MULTISCALE NUMERICAL METHODS FOR AORTIC DISSECTION AND THORACIC ANEURYSM
***Alireza Yazdani**, He Li, Jay Humphrey, George Karniadakis*

7921 EARLY EVENTS OF DISSECTING ABDOMINAL AORTIC ANEURYSM IN ANGIOTENSIN II-INFUSED APOE -/- MICE
***Lydia Aslanidou**, Bram Trachet, Alessandra Piersigilli, Alexis Dorier, Arnaud Leclerc, Rodrigo Fraga-Silva, Alberto Astolfo, Marco Stampanoni, Patrick Segers, Nikolaos Stergiopulos*

7149 SYNCHROTRON IMAGING OF DISSECTING ABDOMINAL AORTIC ANEURYSM IN ANGIOTENSIN II-INFUSED APOE -/- MICE
***Bram Trachet**, Rodrigo Fraga-Silva, Alessandra Piersigilli, Lydia Aslanidou, Alberto Astolfo, Marco Stampanoni, Nikolaos Stergiopulos, Patrick Segers*

Tuesday, June 7 **Minos East**
14:30-16:30

MS 501 - 4: ALGORITHMIC ASPECTS OF HIGH-PERFORMANCE COMPUTING FOR MECHANICS AND PHYSICS

MS Organizers: Santiago Badia, Victor Calo, Javier Principe

Chair: Joan Baiges

4974 **KEYNOTE:** TOWARDS SPACE-TIME ITERATIVE SOLVERS BASED ON BALANCING DOMAIN DECOMPOSITION
***Santiago Badia**, Marc Olm*

8377 EFFECT OF ADAPTIVE MESH REFINEMENT ON A PARALLEL NON-OVERLAPPING DOMAIN DECOMPOSITION SOLVER
*Pavel Kus, **Jakub Šístek***

10290 HYBRID PARALLELISATION OF AN ALGORITHMICALLY DIFFERENTIATED ADJOINT SOLVER
***Pavanakumar Mohanamuraly**, Jan Christian Huckelheim, Jens-Dominik Mueller*

10933 PERFORMANCE TUNING OF SUBDOMAIN LOCAL FE SOLVER IN DOMAIN DECOMPOSITION METHOD
***Hiroshi Kawai**, Masao Ogino, Ryuji Shioya, Tomonori Yamada, Shinobu Yoshimura*

4625 BLOCK ITERATIVE METHODS AND RECYCLING FOR IMPROVED SCALABILITY OF LINEAR SOLVERS
***Pierre Jolivet**, Pierre-Henri Tournier*

Tuesday, June 7 **Minos North**
14:30-16:30

MS 301 - 2: METHODS FOR CUT AND COMPOSITE MESHES: THEORY, ALGORITHMS AND APPLICATIONS

MS Organizers: Mats G. Larson, André Massing
Chair: André Massing

6701 ACCURATE INTEGRATION IN CUT ELEMENTS BASED ON CONFORMAL DECOMPOSITION INTO ISOPARAMETRIC ELEMENTS
Thomas-Peter Fries

5997 CAN EMBEDDED BOUNDARY GRIDS COMPUTE HIGH REYNOLDS NUMBER FLOW?
Marsha Berger

6531 CUT FINITE ELEMENT MODELING OF EMBEDDED LOWER-DIMENSIONAL ELASTICITY MODELS
Mirza Cenanovic, ***Peter Hansbo****, Mats G. Larson*

7082 DIRECT NUMERICAL SIMULATION OF PARTICULATE FLOWS USING A DISCONTINOUS GALERKIN IMMERSED BOUNDARY METHOD
Dennis Krause*, Florian Kummer*

6235 HIGHER ORDER CUT-ELEMENTS FOR WAVE PROPAGATION
Simon Sticko*, Gunilla Kreiss*

Tuesday, June 7 **Minos South**
14:30-16:30

MS 503 - 4: HPC-BASED SIMULATIONS FOR THE ENGINEERING REALM AND INDUSTRIAL APPLICATIONS

MS Organizers: Makoto Tsubokura, Mariano Vázquez, Takayuki Aoki
Chair: Andreas Lintermann

7982 AERODYNAMICS STUDY USING LOCALLY MESH-REFINED LATTICE BOLTZMANN METHOD FOR A GPU COMPUTATION
Yuta Hasegawa*, Takayuki Aoki, Hiromichi Kobayashi*

8316 HPC-BASED LES OF WIND FLOW OVER LARGE URBAN AREA WITH SLIGHT UNDULATION
Hidenori Kawai*, Tetsuro Tamura, Keiji Onishi, Rahul Bale, Makoto Tsubokura, Koji Kondo, Tsuyoshi Nozu, Kazuaki Uchibori*

8375 SCALABLE IMMERSED BOUNDARY METHOD FOR LARGE SCALE SIMULATIONS WITH MOVING IMMERSED STRUCTURES.
Rahul Bale*, Niclas Jansson, Keiji Onishi, Makoto Tsubokura*

8436 HPC ADAPTIVE FINITE ELEMENT SIMULATION OF FLUID DYNAMICS AND FLUID-STRUCTURE INTERACTION IN INDUSTRIAL APPLICATIONS
Johan Hoffman*, Johan Jansson, Niclas Jansson, Rodrigo Vilela De Abreu*

7793 GPU-BASED PARALLEL SIMULATION OF FILM COOLING BY HYBRID THERMAL LATTICE BOLTZMANN METHOD
Yanqin Shangguan*, Xian Wang, Yueming Li*

Tuesday, June 7 **Danae**
14:30-16:30

MS 1001 - 3: STRUCTURAL AND MULTIDISCIPLINARY OPTIMIZATION

MS Organizers: J.F. Aguilar Madeira, Helder C. Rodrigues
Chair: Matteo Bruggi

10127 **KEYNOTE:** MASS MINIMIZATION OF MULTI-MATERIAL LAMINATED COMPOSITES WITH FAILURE CONSTRAINTS
Erik Lund

10084 GRADIENT BASED STRUCTURAL OPTIMIZATION OF JACKET STRUCTURES WITH FATIGUE AND ULTIMATE LIMIT STATE CONSTRAINTS FOR OFFSHORE WIND TURBINES
Jacob Oest*, René Sørensen, Lars Chr. T. Overgaard, Erik Lund*

11364 OPTIMIZATION OF A STIFFNESS MEASURE OF HYBRID FIBER COMPOSITE MATERIALS.
Filipe J.S. Leal, ***Jose M. Guedes****, Helder C. Rodrigues*

11437 QUASI-NEWTON AND BFGS-LIKE METHOD FOR PDE-CONSTRAINED SHAPE OPTIMIZATION.
Jean-Léopold Vié*, Eric Cancès, Grégoire Allaire*

10606 EFFICIENT SIZING OF STRUCTURES UNDER STRESS CONSTRAINTS
Zhi Hong*, Mostafa Abdalla*

Tuesday, June 7 **Europa**
14:30-16:30

CS 410 - 2: COMPUTATIONAL FLUID MECHANICS

Chair: Horia Dumitrescu

4822 THE VORTICITY CREATION PROCESS AT PHYSICAL SURFACES
Horia Dumitrescu*, Vladimir Cardos*

11128 INVESTIGATION OF END-WALL EFFECTS ON LOW PRESSURE TURBINES BY USING LARGE-EDDY SIMULATION
Dogukan Tugberk Karahan*, Seyfullah Cay, Ayse Gul Gungor*

11098 THE OPTIMAL CONTROL OF A MULTI-MASS VIBRATION PROPULSION SYSTEM IN A VISCOUS INCOMPRESSIBLE FLUID
Artem Nuriev*, Zakharova Olga*

11224 HIGH-RESOLUTION SIMULATION OF INTERNAL WAVES ATTRACTORS AND IMPACT OF INTERACTION OF HIGH AMPLITUDE INTERNAL WAVES WITH WALLS ON DYNAMICS OF WAVES ATTRACTORS
Ilias Sibgatullin, *Michael Kalugin*

11990 INDUCED SHOCK WAVE / LAMINAR BOUNDARY LAYER INTERACTION
Hasan Avsar*, Bayram Celik*

Tuesday, June 7 **Leda**
14:30-16:30

MS 1101 - 4: REDUCED BASIS, POD AND PGD MODEL ORDER REDUCTION TECHNIQUES

MS Organizers: Francisco Chinesta, Elias Cueto, Antonio Huerta, Pierre Ladeveze, Gianluigi Rozza
Chair: Pierre Ladeveze

4784 **KEYNOTE:** COMPUTATIONAL VADEMECUMS FOR LARGE INDUSTRIAL APPLICATIONS
Francisco Chinesta*, Jose Vicente Aguado, Domenico Borzacchiello, Chady Ghnatios, Elias Cueto, David Gonzalez*

8645 ON THE USE OF MODEL ORDER REDUCTION IN SHAPE AND TOPOLOGY OPTIMIZATION
***Enrique Nadal**, Juan José Ródenas, José Albelda, Francisco Chinesta*

8679 LARGE EDDY SIMULATION REDUCED ORDER MODELS
Traian Iliescu

8318 EFFICIENT THERMO-MECHANICAL ANALYSIS OF WELDING PROCESSES USING SMART-GFEM
***Diego Canales**, José Vicente Aguado, Francisco Chinesta, Elías Cueto, Jean-Michel Bergheau, Frederic Boitout*

8013 COMPUTING PGD SEPARATED REPRESENTATIONS ON MANIFOLDS
***Jose V. Aguado**, Elena Lopez, Emmanuelle Abisset-Chavanne, Francisco Chinesta, David Gonzalez, Elias Cueto*

Tuesday, June 7 **Athena**
14:30-16:30

MS 703 - 2: COMPUTATIONAL MECHANICS OF WOOD MATERIALS AND TIMBER STRUCTURES
MS Organizers: Josef Füssl, Josef Eberhardsteiner, Erik Serrano, Michael Kaliske
Chair: Sigurdur Ormarsson

9129 WARPING DISPLACEMENT OF PLYWOOD PLATE MODEL
Jouni Freund

10027 A NUMERICAL APPROACH TO DESCRIBE FAILURE OF WOOD - FROM THE WOOD CELL LEVEL UP TO WOOD-BASED PRODUCTS
***Markus Lukacevic**, Josef Füssl, Josef Eberhardsteiner*

10532 AUTOMATIC GEOMETRIC RECONSTRUCTION OF KNOTS WITHIN WOODEN BOARDS BASED ON FIBRE ANGLE MEASUREMENTS
***Georg Kandler**, Markus Lukacevic, Josef Füssl*

10730 A MECHANICAL MODELING APPROACH FOR WOOD-BASED PRODUCTS TAKING THE WOODEN MICROSTRUCTURE INTO ACCOUNT
***Josef Füssl**, Markus Lukacevic, Mingjing Li, Josef Eberhardsteiner, Chris Martin*

11300 STRUCTURAL AND MECHANICAL CHARACTERISATION OF ENGLISH WILLOW: A MICRO-CT STUDY
***Mohammad Saadatfar**, Jin Tao, Michael Turner, Phil Evans*

Tuesday, June 7 **Artemis**
14:30-16:30

MS 113 - 1: MATHEMATICAL AND NUMERICAL MODELING OF THE HEART
MS Organizers: Luca Dede', Luca Pavarino, Alfio Quarteroni
Chair: Luca Dede', Luca Pavarino

5488 **KEYNOTE:** PARALLEL MULTILEVEL ALGORITHMS FOR FLUID-STRUCTURE INTERACTION PROBLEMS
Xiao-Chuan Cai

8450 SCALABLE PRECONDITIONERS FOR FLUID-STRUCTURE INTERACTION PROBLEMS ARISING IN CARDIAC APPLICATIONS
***Davide Forti**, Luca Dedè, Simone Deparis, Antonello Gerbi, Alfio Quarteroni*

5958 DYNAMICS OF ARTIFICIAL AORTIC VALVES: A COMBINED EXPERIMENTAL AND NUMERICAL STUDY
***Julien Sigüenza**, Desiree Pott, Simon Mendez, Simon Sonntag, Franck Nicoud*

9038 NUMERICAL MODELLING OF BLOOD FLOW IN IDEALISED LEFT VENTRICLES
***Anna Tagliabue**, Luca Dedè, Alfio Quarteroni*

Tuesday, June 7 **Aphrodite**
14:30-16:30

MS 104 - 1: GROWTH AND REMODELLING OF LIVING TISSUES IN EXPERIMENT AND SIMULATION
MS Organizers: Antonio Bolea - Albero, Markus Böl
Chair: Markus Böl

7697 ON THE INFLUENCE OF INHOMOGENEOUS MATERIAL PROPERTIES ON BRAIN MORPHOGENESIS
***Silvia Budday**, Paul Steinmann, Ellen Kuhl*

9551 IMAGE-BASED MODELING OF ORGANOGENESIS
*Odyssé Michos, Lada Georgieva, **Christine Lang**, Dagmar Iber*

7341 GROWTH CONTROL DURING DEVELOPMENT
*Dagmar Iber, **Jannik Vollmer***

9454 MODELLING SKELETAL MUSCLE GROWTH
***Ekin Altan**, Alex Zöllner, Oliver Röhrle*

6799 ON THE MODELLING OF FINITE GROWTH FROM THE CELLULAR LEVEL
***Antonio Bolea Albero**, Markus Böl*

Tuesday, June 7 **Antigoni**
14:30-16:30

MS 806 - 2: MULTISCALE MODELLING OF MATERIALS AND STRUCTURES
MS Organizers: Tadeusz Burczyński, Xavier Oliver, Maciej Pietrzyk, Alfredo Huespe
Chair: Maciej Pietrzyk

5743 **KEYNOTE:** A CONTINUUM APPROACH FOR MULTISCALE PROPAGATING MATERIAL FRACTURE MODELING
***Javier Oliver**, Alfredo E. Huespe, Manuel Caicedo*

7338 COUPLED 3D DISLOCATION DYNAMICS AT NANO- AND MICRO-SCALES
***Jaehyun Cho**, Guillaume Anciaux, Jean-François Molinari*

10105 SINTERING OF SILVER NANOPARTICLES: A FINITE-ELEMENT PHASE FIELD APPROACH
***K. Chockalingam**, V.G. Kouznetsova, O. van der Sluis, M.G.D. Geers*

10168 A MESOSCALE STUDY OF DEFORMATION AND FAILURE OF ANGLE-PLY LAMINATES UNDER TENSILE LOADING BY MEANS OF NUMERICAL HOMOGENIZATION.
Marek Romanowicz

11237 PRISM SOLID-SHELL WITH HETEROGONOUS AND HIERARCHICAL APPROXIMATION BASIS
***Lukasz Kaczmarczyk**, Chris Pearce*

Tuesday, June 7 **Apollo East**
14:30-16:30

MS 801 - 1: MULTISCALE COMPUTATIONAL HOMOGENIZATION FOR BRIDGING SCALES IN THE MECHANICS AND PHYSICS OF COMPLEX MATERIALS

MS Organizers: Julien Yvonnet, Kenjiro Terada, Peter Wriggers, Marc Geers

Chair: Julien Yvonnet

16533 **KEYNOTE:** FINITE ELEMENT FORMULATIONS FOR LARGE STRAINS IN ANISOTROPIC MATERIALS
P. Wriggers, J. Schroeder, *F. Auricchio*

10415 GENERALIZED ELASTODYNAMICS OF LOCALLY RESONANT ACOUSTIC METAMATERIALS: A REDUCED ORDER HOMOGENIZATION APPROACH
***Ashwin Sridhar**, Varvara Kouznetsova, Marc Geers*

10262 ANALYSIS OF VARIOUS MICROSCOPIC BOUNDARY CONDITIONS IN COMPUTATIONAL HOMOGENIZATION IN MAGNETO-MECHANICS
***Reza Zabihyan**, Julia Mergheim, Paul Steinmann, Ali Javili*

5434 MULTISCALE TOPOLOGY OPTIMIZATION USING THE FE2R METHOD
***Felix Fritzen**, Liang Xia, Matthias Leuschner*

5149 VIRTUAL MATERIALS TESTING
Karel Matous

Tuesday, June 7 **Apollo West**
14:30-16:30

MS 919 - 2: RECENT ADVANCES IN NUMERICAL SIMULATION AND ANALYSIS OF KINETIC MODELS

MS Organizers: E. Harald van Brummelen, Manuel Torrilhon

Chair: E. Harald van Brummelen

6097 THE SEMI-LAGRANGIAN METHOD FOR VLASOV TYPE EQUATIONS IN DIFFERENT MESH CONTEXTS
***Michel Mehrenberger**, Eric Sonnendrücker*

6703 REALIZABILITY LIMITING IN HIGH-ORDER WENO SOLUTIONS FOR ENTROPY-BASED MOMENT CLOSURES
***Graham Alldredge**, Cory Hauck*

10052 POLYATOMIC MODEL FOR RAREFIED FLOWS
***Florian Bernard**, Angelo Iollo, Gabriella Puppo*

4712 ASYMPTOTIC-PRESERVING STOCHASTIC GALERKIN SCHEMES FOR THE BOLTZMANN EQUATION WITH UNCERTAINTY
***Jingwei Hu**, Shi Jin, Ruiwen Shu*

10386 MESO - MACRO MODELS FOR A HARD SPHERE GAS
***Sergey Bogomolov**, Natalya Esikova, Artem Kuvshinnikov*

Tuesday, June 7 **Room 1**
14:30-16:30

MS 1202 - 2: ADVANCED BEAM MODELS

MS Organizers: Dinar Camotim, Zuzana Dimitrovová, Rodrigo Gonçalves

Chair: Zuzana Dimitrovová

9648 SINGULARLY PERTURBED PROBLEMS IN MECHANICS (SOME FUNDAMENTAL ASPECTS OF DESIGNING AND COMPUTING)
Lyudmila K. Kuzmina

9132 GBT-BASED ASSESSMENT OF THE MECHANICS OF LOCAL-DISTORTIONAL INTERACTION IN THIN-WALLED LIPPED CHANNEL COLUMNS
*André Martins, **Dinar Camotim**, Pedro Dinis*

8061 BUCKLING ANALYSIS OF THIN-WALLED BOX BEAM-COLUMNS BY HIGHER-ORDER BEAM THEORY (HOBT)
***Do-Min Kim**, Soomin Choi, Gang-Won Jang, Yoon Young Kim*

7862 HIGHER-ORDER BEAM ANALYSIS OF MULTIPLY-CONNECTED BOX BEAMS UNDER OUT-OF-PLANE BENDING AND TORSION USING EXACT JOINT MATCHING CONDITIONS
***Soomin Choi**, Yoon Young Kim*

6178 ANALYSIS OF THIN-WALLED BOX BEAMS WITH VARIABLE CROSS SECTIONS BY THE HIGHER-ORDER BEAM THEORY
***Dongil Shin**, Soomin Choi, Gang-Won Jang, Yoon Young Kim*

10457 FLEXIBLE WAVES IN INFINITE BEAM ON INHOMOGENEOUS ELASTIC FOUNDATION: STABILITY AND UNSTABILITY, PARAMETRIC RESONANCES
***Dmitry Indeitsev**, Yulia Mochalova*

Tuesday, June 7 **Room 2**
14:30-16:30

MS 305 - 1: ADVANCED MESHING METHODS FOR INDUSTRIAL APPLICATIONS

MS Organizers: Frederic Alauzet, Thierry Coupez, Alain Dervieux, Adrien Loseille

Chair: Thierry Coupez

7758 PARALLEL CAVITY-BASED ADAPTIVE LOCAL REMESHING FOR LARGE SCALE APPLICATIONS
*Adrien Loseille, **Frederic Alauzet***

10417 SINGULAR MESH GENERATION FROM MULTIPLE OVERSET MESHES: A TOOL FOR INDUSTRIAL APPLICATIONS
***Gennaro Abbruzzese**, Marta Cordero Gracia, Mariola Gómez López, Nuno Vinha*

10571 PARALLEL MESH ADAPTATION FOR UNSTEADY COMPUTATIONS USING MULTIGRID METHODS
***Hugues Digonnet**, Thierry Coupez, Luisa Silva*

7258 GENERATION OF ANISOTROPIC HIGH-ORDER HYBRID GRIDS FOR SIMULATION OF HIGH-REYNOLDS NUMBER FLOWS
***Piotr Szaltys**, Jerzy Majewski, Stanislaw Gepner*

10728 FINE GRAIN MULTI THREADED MESH GENERATION
Jean-François Remacle

Tuesday, June 7 **Room 3**
14:30-16:50

MS 1301: THE STOCHASTIC COMPUTER METHODS IN MECHANICS

MS Organizers: Marcin Kamiński, Takahiko Kurahashi

Chair: Marcin Kamiński Takahiko Kurahashi

9229 **KEYNOTE:** ON FULLY COUPLED THERMO-ELASTO-PLASTIC STOCHASTIC FINITE ELEMENT ANALYSIS OF STEEL STRUCTURES
***Marcin Kaminski**, Michał Strakowski*

9206 THE BOOTSTRAP APPROACH TO THE STATISTICAL SIGNIFICANCE OF PARAMETERS IN THE FIXED EFFECTS MODEL
***Jacek Pietraszek**, Renata Dwornicka, Agnieszka Szczotok*

10416 AN INTRODUCTION TO STOCHASTIC FINITE ELEMENT METHOD ANALYSIS OF HYPERELASTIC STRUCTURES
*Marcin Kamiński, **Damian Sokołowski***

5337 STOCHASTIC TECHNIQUES FOR THE NUMERICAL SOLUTION OF ENGINEERING BOUNDARY VALUE PROBLEMS
***Victor Maceiras**, Manuel Casteleiro*

5810 H-MATRIX BASED SECOND MOMENT ANALYSIS FOR ROUGH RANDOM FIELDS
***Jürgen Dölz**, Helmut Harbrecht, Michael Peters, Christoph Schwab*

4440 FLOW FIELD ESTIMATION IN OPEN CHANNEL BASED ON KALMAN FILTER FINITE ELEMENT METHOD
***Taichi Yoshiara**, Takahiko Kurahashi, Yasuhide Kobayashi, Toshihiko Eto*

Tuesday, June 7 **Room 4**
14:30-16:30

CS 212 - 2: NUMERICAL MODELING OF DAMAGE, FAILURE AND FRACTURE
Chair: Jurica Soric

7030 **KEYNOTE:** DAMAGE MODELING USING STRAIN GRADIENT BASED FINITE ELEMENT FORMULATION
*Filip Putar, **Jurica Soric**, Tomislav Lesicar, Zdenko Tonkovic*

8689 STUDY ON THE DAMAGE EVOLUTION EQUATION AND SPALLATION OF METALS
Jiedong Cao

5668 DUCTILE FRACTURE CRITERIA IN PREDICTION OF SLANT FRACTURE
*Petr Kubik, Frantisek Sebek, **Jindrich Petruska***

6276 PHASE-FIELD MODELING OF FRACTURE IN PARTIALLY SATURATED POROUS MEDIA
***Tuanny R.M. Cajuhi**, Laura De Lorenzis, Lorenzo Sanavia*

12083 DAMAGE DETECTION OF A BRIDGE BY PARAMETRIC STATISTICAL MOMENT METHOD
***Isabella Failla**, Nicola Impollonia, Giuseppe Ricciardi*

Tuesday, June 7 **Room 5**
14:30-16:30

CS 460 - 2: UNSTEADY FLOW COMPUTATION
Chair: Natalya Fedorova

10980 SIMULATIONS OF BLAST WAVE PROPAGATION IN OPEN AND CLOSED SPACE
***Natalya Fedorova**, Svetlana Valger, Yulia Zakharova*

10634 PATHWAYS TO IMPROVED AERODYNAMIC DESIGN
***James Page**, Paul Hield, Callum Mantell, Paul Tucker*

5348 NUMERICAL STUDY OF THE NASA COMMON RESEARCH MODEL IN SUBSONIC STALL CONDITION
*Juan S. Velandia, **Omar D. Lopez**, Rodrigo A. Jimenez*

6536 ON THE REGULARISATION OF NON-REFLECTING BOUNDARY CONDITIONS NEAR ACOUSTIC RESONANCE
***Christian Frey**, Hans-Peter Kersken*

7105 ON GRID RESOLUTION REQUIREMENTS FOR LES OF WALL-BOUNDED FLOWS
***Saleh Rezaeiravesh**, Mattias Liefvendahl, Christer Fureby*

5316 LINEARISED FREQUENCY DOMAIN GUST ANALYSIS OF LARGE CIVIL AIRCRAFT
***Philipp Bekemeyer**, Reik Thormann, Sebastian Timme*

Tuesday, June 7 **Room 7**
14:30-16:30

MS 1214 - 2: HISTORIC MASONRY STRUCTURES: MODELLING, ASSESSMENT & RETROFIT
MS Organizers: Panagiotis Asteris, Charilaos Maniatakis, Constantine Spyrakos
Chair: Aikaterini Marinelli

8066 A COMBINED EXPERIMENTAL AND NUMERICAL STUDY OF THE PULL-OUT MECHANISM OF THREADED TITANIUM BARS EMBEDDED IN MARBLE BLOCKS
*Stavros K. Kourkoulis, **Aikaterini Marinelli**, Ioanna Dakanali*

5718 CONSTRUCTION PHASES ANALYSIS OF UNREINFORCED MASONRY BUILDINGS THROUGH EQUIVALENT FRAME MODEL
*Francesco Pugi, **Alessio Francioso**, Giacomo Sevieri*

8239 AN EXTENSION OF TRACKING ALGORITHMS FOR THE SIMULATION OF MULTIPLE AND INTERSECTING CRACKING
***Savvas Saloustros**, Luca Pelà, Miguel Cervera, Pere Roca*

10185 THREE-DIMENSIONAL NONLINEAR BEHAVIOUR OF MASONRY WALLS MODELLED WITH DISCRETE ELEMENTS
***Daniele Baraldi**, Antonella Cecchi*

11724 FAST KINEMATIC LIMIT ANALYSIS OF FRP REINFORCED MASONRY VAULTS THROUGH A NEW GENETIC ALGORITHM NURBS-BASED APPROACH
*Andrea Chiozzi, Gabriele Milani, **Antonio Tralli***

8509 HISTORICAL MASONRY BUILDINGS IN THE TUSCANY REGION: STATIC ASSESSMENT AND SEISMIC VULNERABILITY OF FOUR ANCIENT PALACES
***Silvia Caprili**, Federico Mangini, Walter Salvatore*

Tuesday, June 7 **Room 8**
14:30-16:30

CS 110 - 4: NUMERICAL MODELS IN BIOMECHANICS
Chair: Konstantinos Tzirakis

10847 FINITE ELEMENT BASED NUMERICAL SIMULATION OF TUMOR BRAIN
***Konstantinos Tzirakis**, John W. Peterson, Yannis Papaharilaou*

10440 ROLE OF VASCULAR NORMALIZATION AND MECHANICAL STRESS ALLEVIATION IN METRONOMIC CHEMOTHERAPY: A COMPUTATIONAL STUDY FOR SOLID TUMOR TREATMENT
***Fotios Mpekris**, James W. Baish, Triantafyllos Stylianopoulos, Rakesh K. Jain*

10486 SWELLING BEHAVIOR OF SOLID TUMORS AND IMPLICATIONS FOR CANCER THERAPY
***Chrysovalantis Voutouri**, Christiana Polydorou, Panagiotis Papageorgis, Triantafyllos Stylianopoulos*

4597 BIOMECHANICS OF THE NEOBLADDER DURING THE FILLING STAGE
***Aisha Tariq Nusef**, Roustem Miftahof, Ziad Al-Naieb*

8837 MULTISCALE BIPHASIC MODELLING OF TUMOUR GROWTH: THE EFFECT OF COLLAGEN MICROMECHANICS ON DRUG DELIVERY
***Peter A. Wijeratne**, Vasileios Vavourakis, John H. Hipwell, Rebecca Shipley, Triantafyllos Stylianopoulos, Andrew Evans, Sarah Pinder, David J. Hawkes*

Tuesday, June 7 **Room 9**
14:30-16:30

MS 415: COMPUTATIONAL NON-NEWTONIAN FLUID MECHANICS

MS Organizers: Georgios Georgiou, John Tsamopoulos
Chair: Georgios Georgiou

4629 DEVELOPMENT OF CONFINED VISCOPLASTIC FLOWS WITH HETEROGENEOUS WALL SLIP
Pandelitsa Panaseti, Maria Philippou, Zacharias Kountouriotis, ***Georgios Georgiou***

10359 IMPROVING THE EFFICIENCY OF FINITE VOLUME METHODS FOR THE SIMULATION OF VISCOELASTIC FLOWS
Alexandros Syrakos*, Yannis Dimakopoulos, John Tsamopoulos*

8280 A PATH FOLLOWING ALGORITHM TO COMPUTE BIFURCATION DIAGRAMS IN NATURAL CONVECTION PROBLEMS INVOLVING BINGHAM FLUIDS
Marc Medale*, Bruno Cochelin*

6722 SIMULATING VISCOELASTIC FREE-SURFACE FLOWS USING AN INTERFACE-TRACKING APPROACH
Philipp Knechtges*, Maximilian von Danwitz, Marek Behr, Stefanie Elgeti*

9217 VISCOPLASTIC POISEUILLE FLOW IN THE DUCTS WITH WALL SLIP
Ekaterina Muravleva, ***Larisa Muravleva***

9114 OSCILLATORY FLOW PAST A CIRCULAR CYLINDER
Andreas Alexandrou*, Stavros Kassinos*

Tuesday, June 7 **Room 10**
14:30-16:50

MS 1212 - 1: DYNAMICS AND SEISMIC RESPONSE OF ROCKING AND SELF-CENTERING STRUCTURES

MS Organizers: Matthew DeJong, Elias Dimitrakopoulos, Michalis Fragiadakis
Chair: Elias Dimitrakopoulos, Matthew DeJong

7122 ROCKING RESPONSE OF MASONRY BLOCK STRUCTURES USING MATHEMATICAL PROGRAMMING
Francesco Portioli*, Lucrezia Cascini, Raffaele Landolfo*

10190 EXPERIMENTAL AND ANALYTICAL INVESTIGATION OF THE SEISMIC RESPONSE OF A COLUMN ROCKING AND ROLLING ON A CONCAVE BASE
Jonas A. Bachmann, Patrick Blöchlinger, Matthias Wellauer, ***Michalis F. Vassiliou****, Bozidar Stojadinovic*

10621 SEISMIC ASSESSMENT OF MASONRY ROCKING COLUMNS AND FRAMES UNDER GROUND MOTION EXCITATIONS
Ioannis Kavvadias*, Lazaros Vasiliadis*

10169 SMOOTH-ROCKING OSCILLATOR UNDER NATURAL ACCELEROGRAMS
Blerta Lipo*, Gianmarco de Felice*

11696 A MACRO-ELEMENT FORMULATION FOR ROCKING FLEXIBLE BODIES WITH A DEFORMABLE BASE
Evangelos Avgenakis*, Ioannis N. Psycharis*

8334 CONTROLLED ROCKING, DISSIPATIVE CONTROLLED ROCKING AND MULTI-HIERARCHICAL ACTIVATION: NUMERICAL ANALYSIS AND EXPERIMENTAL TESTING
Royce Liu*, Alessandro Palermo*

11903 AN INVESTIGATION OF THE DYNAMICS OF ROCKING ISOLATION FOR EARTHQUAKE-RESILIENT DESIGN
Sinan Acikgoz, ***Matthew DeJong***

Tuesday, June 7 **Room 11**
14:30-16:30

CS 1200 - 2: STRUCTURAL DYNAMICS

Chair: Cheol Kim

6156 ANALYSIS OF NOISE AND VIBRATION TRANSMISSIBILITY TO VEHICLE INTERIOR FROM A TRANSMISSION HOUSING USING FEM AND BEM
Cheol Kim*, Ji-Hun Yu*

7050 COMPUTATIONAL METHOD OF DETERMINATION OF INTERNAL EFFORTS IN LINKS OF MECHANISMS AND ROBOT MANIPULATORS WITH STATICALLY DEFINABLE STRUCTURES CONSIDERING THE DISTRIBUTED DYNAMICALLY LOADINGS
Zhumadil Baigunchekov*, Muratulla Utenov, Nurzhan Utenov, Saltanat Zhilkibayeva*

7918 STATIC AND DYNAMIC ANALYSIS OF A TETHERED AEROSTAT
Jean-Sébastien Schotté*, Charles Bussy*

9685 EQUIVALENT DAMPING OF TALL BUILDINGS WITH DAMPED OUTRIGGER SYSTEMS FOR SEISMIC AND WIND DESIGN
M. Emre Erdemli, ***Barış Erkuş***

6566 FINITE ELEMENT ANALYSIS OF TIMBER BEAMS WITH FLAWS
Janka Kovacikova*, Mats Ekevad, Olga Ivankova, Sven Berg*

8809 PREDICTING STRENGTH PROPERTIES OF SAWN SCOTS PINE WOOD MATERIAL USING THERMAL IMAGING
Jukka Antikainen*, Veikko Möttönen*

Tuesday, June 7 **Room 12**
14:30-16:30

MS 1206 - 2: ADVANCES IN NUMERICAL METHODS FOR LINEAR AND NON-LINEAR DYNAMICS AND WAVE PROPAGATION

MS Organizer: Alexander Idesman
Chair: Alexander Idesman

11031 **KEYNOTE:** RECIPROCAL MASS MATRICES IN EXPLICIT DYNAMICS
Anne-Kathrin Schäuble, Anton Tkachuk, ***Manfred Bischoff***

8337 FULL INVERSIONOF REFLECTED WAVES WITHOUT LOW TIME FREQUENCIES
Vladimir Tcheverda*, Guy Chevent, Kirill Gadylshin*

8412 HYBRID ASYNCHRONOUS PML FOR ELASTIC WAVE PROPAGATION
Michael Brun*, Eliass Zafati, Irini Djearn-Maigre, Prunier Florent*

8675 A LAGRANGE EXPLICIT IMPACT ALGORITHM: APPLICATION TO BRIDGE CRANES SUBJECTED TO MULTIPLE IMPACTS DURING AN EARTHQUAKE
Fatima-Ezzahra Fekak*, Anthony Gravouil, Michael Brun, Bruno Depale*

10804 LOCALIZED SPACE-TIME ADAPTATIVE REFINEMENT BASED ON MULTIGRID FOR TRANSIENT DYNAMIC PROBLEMS.
Alexandre Chemin*, Thomas Elguedj, Anthony Gravouil*

Tuesday, June 7 **Room 17**
14:30-16:30

CS 1010 - 4: COMPUTATIONAL INVERSE PROBLEMS AND OPTIMIZATION

Chair: Stefan Werner

6480 MODEL-BASED CONTROL OF DYNAMIC FRICTIONAL CONTACT PROBLEMS
Stefan Werner

11183 ON THE USE OF GRADIENT-ENHANCED METAMODELS FOR GLOBAL APPROXIMATION AND GLOBAL OPTIMIZATION
***Luc Laurent**, Bruno Soulier, Rodolphe Le Riche, Pierre-Alain Boucard*

11035 MECHANICAL CHARACTERIZATION OF PAVEMENT STRUCTURE BY INVERSE ANALYSIS AND SPECTRAL ELEMENT MODELING
Tomasz Garbowski

10873 ADJOINT-BASED ROBUST OPTIMIZATION USING POLYNOMIAL CHAOS EXPANSIONS
***João Miranda**, Dinesh Kumar, Chris Lacor*

Tuesday, June 7 **Room 18**
14:30-16:30

STS 2 - 2: GREEN AND SMART INTELLIGENT TRANSPORT SYSTEMS (IST): TOWARDS MORE INTEGRATED COMPUTATIONAL AND IT TOOLS FOR THE DEPLOYMENT OF NOVEL TRAVEL SERVICES

STS Organizers: Pedro Diez, P. Neittaanmaki, T. Tuovinen, Jacques Periaux

Chair: Pedro Diez, Jacques Periaux

14322 ECOLOGICAL AND PUBLIC HEALTH CONCERNS REGARDING MODERN TRANSPORTATION
William E. Fitzgibbon

14324 LAND-USE (SPATIAL) OPTIMAL PLANNING FOR PORT AREAS
***Blas Galvan**, A. Cacereño, D. Greiner, B. González, G. Winter*

14329 THREE-DIMENSIONAL BIN PACKING PROBLEM WITH A STABILITY REJECTION CRITERION
*Teemu Linkosaari, Tero Urponen, Henrik Juvonen, **Marko Makela**, Yury Nikulin*

14331 ROBUST DESIGN OPTIMIZATION OF ENGINESYSTEM AND COMPONENTS
Carlo Poloni

Tuesday, June 7 **Room 20**
14:30-16:30

MS 115 - 2: TUMOR GROWTH MODELING AND THE MECHANICAL ASPECTS OF CANCER

MS Organizers: Hector Gomez, Assad Oberai, Krishna Garikipati, Kristen Mills, Thomas J.R. Hughes

Chair: Hector Gomez

8298 MECHANICS OF SPROUTING ANGIOGENESIS IN TUMORS
***Rui Travasso**, Patrícia Santos-Oliveira, António Correia, Tiago Rodrigues, Paulo Matafome, Teresa Ribeiro-Rodrigues, Henrique Girão, Juan Carlos Rodríguez-Manzaneque, Raquel Seiça*

MS 111: POPULATION BALANCE MODELING: CURRENT STATUS, FUTURE PROSPECTS AND NOVEL APPLICATIONS FROM NANOPARTICLES' SYNTHESIS TO (LUNG) CANCER

MS Organizers: Georgios Lolas, Georgios Bourantas, Panagiotis Gavriliadis, Konstantinos Syrigos

Chair: Georgios Lolas

10608 STATISTICAL THERMODYNAMICS OF POPULATIONS
Themis Matsoukas

8879 MOMENT METHODS FOR THE ACCURATE DESCRIPTION OF SOOT DYNAMICS: MATHEMATICAL MODELING AND REALIZABLE NUMERICAL SCHEMES
***Frédérique Laurent**, Tan-Trung Nguyen, Benedetta Franzelli, Rodney O. Fox, Marc Massot*

5511 TAYLOR-SERIES EXPANSION METHOD OF MOMENTS FOR SOLVING POPULATION BALANCE EQUATION
***Mingzhou Yu**, Yueyan Liu*

10547 MULTISCALE COMPUTATIONAL MODELLING OF CANCER GROWTH AND SPREAD: A NOVEL THREE-SCALE MATHEMATICAL APPROACH
Dumitru Trucu

11987 MATHEMATICAL MODELING OF PARTICLE DYNAMICS IN SPRAY FLAMES
***Vasiliki Tsikourkitoudi**, George Lolas, George Bourantas, Panagiotis Gavriliadis, Tao Zhang*

Tuesday, June 7 **Room 21**
14:30-16:30

MS 404 - 1: SIMULATION OF ENVIRONMENTAL FLOWS

MS Organizers: Pablo Ortiz, Piotr K. Smolarkiewicz, Joanna Szmelter

Chair: Joanna Szmelter

5857 **KEYNOTE:** THE EVOLVING STATE-OF-THE-ART IN GLOBAL NUMERICAL WEATHER PREDICTION
Nils Wedi

5712 FINITE ELEMENT MODELING OF SHALLOW FLOWS OVER EVOLUTIONARY BEDFORMS
***Pablo Ortiz**, Jorge Molina*

10225 APPLICATION OF THE SHALLOW WATER EQUATIONS TO REAL FLOODING CASE
***Hani Ali**, Pierre-Yves Lagrée, Jose-Maria Fullana*

9262 COMPATIBLE FINITE ELEMENT METHODS FOR NUMERICAL WEATHER PREDICTION.
***Jemma Shipton**, Colin Cotter*

9087 MODELLING OF LONG WAVES (SEICHES) IN CASCAIS BAY.
*Vera Bras, **Antonio Trigo-Teixeira***

Tuesday, June 7 **Room 22**
14:30-16:30

CS 940 - 2: EXTENDED DISCRETIZATION METHODS

Chair: Artsem Boris Kunin

7975 THERMO-MECHANICAL CONTACT BETWEEN CRACK SURFACES IN THE EXTENDED FINITE ELEMENT METHOD
***Artsem Boris Kunin**, Stefan Loehnert, Peter Wriggers*

10303 SHELL ELEMENT WITH THICKNESS STRETCH AND TRANSVERSE NORMAL STRESS
***Takeki Yamamoto**, Takahiro Yamada, Kazumi Matsui*

11590 A X-FEM APPROACH FOR THE THERMOMECHANICAL MODELING OF THIN LAYERS
***Issam Bencheikh**, François Bilteryst, Mohammed Nouari*

CS 960 - 1: MESHLESS METHODS
Chair: Panos Metsis

7042 MODELING OF DEFORMATION RESPONSES USING MESHLESS LOCAL PETROV-GALERKIN (MLPG) APPROACH BASED ON STRAIN GRADIENT ELASTICITY
***Boris Jalusic**, Tomislav Jarak, Jurica Soric*

11770 MESHLESS METHODS VS. FEM: A COMPUTATIONAL EFFICIENCY STYDY
*Alexander Karatarakis, **Panos Metsis**, Manolis Papadrakakis*

Tuesday, June 7 **Room 23**
14:30-16:30

MS 1009 - 1: ADJOINT METHODS FOR STEADY & UNSTEADY OPTIMIZATION
MS Organizers: Kyriakos C. Giannakoglou, Jens Dominik Mueller
Chair: Jens Dominik Mueller

7708 **KEYNOTE:** CAD-FREE ADJOINT SHAPE OPTIMISATION IN MARITIME TWO-PHASE FLOWS
***Thomas Rung**, Jörn Kröger*

4881 TWO-STEPS SHAPE OPTIMIZATION ALGORITHM IMPROVING HYDRODYNAMICS STABILITY
Takashi Nakazawa

9306 AERODYNAMIC OPTIMISATION USING ADJOINT METHODS AND PARAMETRIC CAD MODELS
*Philip Hewitt, Simão Marques, **Trevor Robinson**, Dheeraj Agarwal*

10552 A CONTINUOUS ADJOINT APPROACH FOR VEHICLE INTERIOR NOISE REDUCTION
***Christos Kapellos**, Michael Hartmann*

10065 OPTIMISATION OF A U-BEND USING A CAD-BASED ADJOINT METHOD WITH DIFFERENTIATED CAD KERNEL
*Salvatore Auriemma, Mladen Banovic, **Orest Mykhaskiv**, Herve Legrand, Jens-Dominik Mueller, TomVerstraete, Andrea Walther*

16:30-17:00
Coffee Break

TECHNICAL SESSIONS

Tuesday, June 7 **Zeus East**
17:00-19:00

MS 105 - 2: SIMULATION OF CARDIOVASCULAR PROCEDURES AND DEVICES

MS Organizers: Ferdinando Auricchio, Michele Conti, Simone Morganti Alessandro Reali Alessandro Veneziani

Chair: Yuri Vassilevski

8793 **KEYNOTE:** PERSONALIZED COMPUTATION OF FRACTIONAL FLOW RESERVE IN CASE OF TWO CONSECUTIVE STENOSES
***Yuri Vassilevski**, Timur Gamilov, Philip Kopylov*

8099 MODEL REDUCTION METHODOLOGY FOR ENDOVASCULAR REPAIR SIMULATIONS
***Victor A. Acosta Santamaria**, Guillaume Daniel, David Perrin, Stephane Avril*

8690 MODELLING OF PATIENT-SPECIFIC CASES OF ATHEROSCLEROSIS IN CAROTID ARTERIES
***Timur Gamilov**, Roman Pryamonosov, Sergey Simakov*

8817 INVESTIGATION OF COMPLEX BLOOD FLOW REGIMES IN MEMBRANE OXYGENATORS USING ENHANCED BLOOD VISCOSITY AND STATISTICAL BLOOD COAGULATION MODELS
***Lars Krenkel**, Franz Suess, Markus Ruetten*

Tuesday, June 7 **Zeus West**
17:00-19:20

MS 112 - 2: ANEURYSMS: SOLID MECHANICS, FLUID MECHANICS, AND MECHANOBIOLOGY

MS Organizers: Christian J. Cyron Sven Hirsch, Philippe Bijlenga, Roland C. Aydin, Anne M. Robertson, Gerhard A. Holzapfel

Chair: Gerhard A. Holzapfel, Christian J. Cyron

5516 MODELLING THE MECHANOBIOLOGICAL EVOLUTION OF INTRACRANIAL ANEURYSMS: AN INTEGRATIVE IN VIVO, IN VITRO AND IN SILICO APPROACH
***Aikaterini Mandaltsi**, Wing Ki Wong, Yuqian Mei, Anne M. Robertson, Namrata Gundiah, Paul N. Watton*

7078 IMPLEMENTATION OF GROWTH AND REMODELING MODEL IN 3D FINITE ELEMENT CODE: APPLICATION TO ABDOMINAL AORTIC ANEURYSM
***Igor Karšaj**, Nino Horvat, Lana Virag*

6202 INFLUENCE OF AXIAL FEATURES OF ABDOMINAL AORTIC ANEURYSMS ON THE EXPANSION RATE: A COMPUTATIONAL CASE STUDY USING 3D FINITE ELEMENTS
***Lana Virag**, Igor Karšaj, Nino Horvat, Simon Ferlin*

5236 A HOMOGENIZED CONSTRAINED MIXTURE MODEL FOR VOLUMETRIC GROWTH AND REMODELING IN BLOOD VESSELS
***Fabian A. Braeu**, Roland C. Aydin, Christian J. Cyron*

5194 MECHANOBIOLOGICAL STABILITY: A NEW PARADIGM TO UNDERSTAND THE ENLARGEMENT OF ANEURYSMS?
***Christian J. Cyron**, Roland C. Aydin*

11350 INITIATION AND ENLARGEMENT OF INTRACRANIAL SACCULAR ANEURYSMS USING A RATE-SENSITIVE INELASTIC THEORY OF GROWTH SIMULATED WITH ISOGEOMETRIC ANALYSIS FROM PATIENT-SPECIFIC GEOMETRY WITH COMPARISON TO ALTERNATIVE THEORIES
***Fred Nugen**, Luca Dede, Michael Borden, Thomas JR Hughes*

7415 FLOW CONDITIONS IN THE INTRACRANIAL ANEURYSM LUMEN ASSOCIATE WITH INFLAMMATION AND DEGENERATIVE CHANGES OF THE ANEURYSM WALL – IMPLICATIONS FOR THE DIAGNOSTICS OF RUPTURE-PRONE ANEURYSMS
*Juan Cebral, Riikka Tulamo, Anne Robertson, **Juhana Frösen***

Tuesday, June 7 **Zeus North**
17:00-19:00

MS 901 - 2: ISOGEOMETRIC METHODS

MS Organizers: Yuri Bazilevs, David J. Benson, Rene De Borst, Thomas J.R. Hughes, Trond Kvamsdal, Alessandro Reali, Giancarlo Sangalli, Clemens V. Verhoosel

Chair: Giancarlo Sangalli

7125 DIVERGENCE CONFORMING TURBULENCE WITH THE VARIATIONAL MULTISCALE METHOD
***Timo van Opstal**, Yuri Bazilevs, Trond Kvamsdal, Jinhui Yan*

8285 MIXED ISOGEOMETRIC FINITE CELL METHOD: A COMPARATIVE STUDY OF DIFFERENT ELEMENT FAMILIES
***Tuong Hoang**, Clemens V. Verhoosel, Ferdinando Auricchio, E. Harald van Brummelen, Alessandro Reali*

4535 SPLINE-BASED FLUID-STRUCTURE-INTERACTION FOR SLOSHING TANKS
***Stefanie Elgeti**, Norbert Hosters, Atanas Stavrev, Jan Helmig, Marek Behr*

10186 WEAKENING THE TIGHT COUPLING BETWEEN GEOMETRY AND SIMULATION IN ISOGEOMETRIC ANALYSIS
***Satyendra Tomar**, Elena Atroshchenko, Gang Xu, Stephane Bordas*

7654 APPLICATION OF ADAPTIVE ISOGEOMETRIC ANALYSIS USING HIERARCHICAL B-SPLINES TO HYDRO-MECHANICALLY COUPLED TUNNEL SIMULATIONS
***Hoang-Giang Bui**, Günther Meschke*

10793 OPTIMAL AND REDUCED QUADRATURE RULES FOR TENSOR PRODUCT AND HIERARCHICALLY REFINED SPLINES IN ISOGEOMETRIC ANALYSIS
***Rene Hiemstra**, Francesco Calabro, Dominik Schillinger, Thomas Hughes*

Tuesday, June 7 **Minos East**
17:00-19:00

MS 501 - 5: ALGORITHMIC ASPECTS OF HIGH-PERFORMANCE COMPUTING FOR MECHANICS AND PHYSICS

MS Organizers: Santiago Badia, Victor Calo, Javier Principe

Chair: Santiago Badia

4831 ALGORITHM FOR FAST SIMULATIONS OF SPACE-TIME FINITE ELEMENT METHOD
***Marcin Skotniczny**, Anna Paszynska, Maciej Paszynski*

8124 FEMPAR: A MULTISCALE, MULTILEVEL AND MULTIPHYSICS FINITE ELEMENT SCALABLE SOFTWARE
*Santiago Badia, Alberto F. Martín, **Javier Principe***

8317 EVALUATION OF A PARALLEL TASK-BASED APPROACH TO ACCELERATE HIGH-ORDER CFD CALCULATIONS ON HETEROGENEOUS ARCHITECTURES.
***Raphael Blanchard**, Emeric Martin, Florent Renac, Olivier Aumage, Samuel Thibault, François Pellegrini*

8321 IMPROVING PARALLEL PERFORMANCE OF FENICS BY HYBRID MPI/PGAS
***Niclas Jansson**, Johan Hoffman*

9103 ADAPTIVE SIMULTANEOUS-FETI: SCALABILITY RESULTS, ROBUSTNESS ASSESSMENTS AND APPLICATION TO FINITE DISPLACEMENT PROBLEMS
***Christophe Bovet**, Augustin Parret-Fréaud, Nicole Spillane, Pierre Gosselet*

8890 PERFORMANCE PORTABILITY FOR MULTI-FLUID PLASMA ASSEMBLY
*Eric C. Cyr**, Matthew Bettencourt**, Richard Kramer, Roger P. Pawlowski, Edward Phillips, Allen Robinson, John N. Shadid*

Tuesday, June 7 **Minos North**
17:00-19:00

MS 301 - 3: METHODS FOR CUT AND COMPOSITE MESHES: THEORY, ALGORITHMS AND APPLICATIONS
MS Organizers: Mats G. Larson, André Massing
Chair: Mats G. Larson

9826 A STABILIZED NITSCHE TYPE XFEM FOR NAVIER SLIP BOUNDARY CONDITIONS
***Magnus E. Winter**, Benedikt Schott, Wolfgang A. Wall*

11080 A CUT FINITE ELEMENT METHOD FOR MULTI-PHASE FLOWS
Susanne Claus

5986 OCTREE FINITE ELEMENT METHOD FOR PDES POSED ON SURFACES
Maxim Olshanskii

7198 LEVEL-SET ALGORITHMS SPECIALIZED FOR AN EXTENDED DISCONTINUOUS GALERKIN DISCRETIZATION IN CONTEXT OF TWO-PHASE FLOWS
***Martin Smuda**, Florian Kummer, Thomas Utz*

9028 PARALLEL VARIATIONAL TRANSFER BETWEEN ARBITRARILY DISTRIBUTED NON-MATCHING MESHES AND ITS APPLICATION IN CONTACT MECHANICS AND FLUID STRUCTURE INTERACTION
*Rolf Krause, Patrick Zulian, Erich Foster, **Maria Nestola***

Tuesday, June 7 **Minos South**
17:00-19:00

CS 500 - 1: HIGH PERFORMANCE COMPUTING
Chair: Vincent Legat

7798 AN EFFICIENT PARALLEL IMPLEMENTATION OF EXPLICIT MULTIRATE RUNGE-KUTTA SCHEMES
***Vincent Legat**, Bruno Seny, Jonathan Lambrechts, Jean-François Remacle*

11181 A FAIR PERFORMANCE COMPARISON BETWEEN HIGH ORDER AND CLASSICAL FINITE VOLUME SCHEMES FOR UNSTRUCTURED GRIDS AND COMPLEX TURBULENT FLOWS
***Julien Bodart**, Jeremie Gressier, Raphael Lamouroux, Gilles Grondin, Friedrich Grabner*

10289 LIMITED MEMORY PRECONDITIONERS FOR NONSYMMETRIC PROBLEMS WITH APPLICATION TO STRUCTURAL MECHANICS
*Sylvain Mercier, Xavier Vasseur, **Nicolas Tardieu**, Serge Gratton*

7506 ON A DYNAMIC SCHEDULING ALGORITHM FOR MASSIVELY PARALLEL COMPUTATIONS OF ATOMIC ISOTOPE
***Elizaveta Dorofeeva**, Jatin Arora, Stefan Typel, Gevorg Poghosyan, Peter Sanders, Achim Streit*

6218 TOWARDS EXASCALE BEM SIMULATIONS: HYBRID PARALLELISATION STRATEGIES FOR BOUNDARY ELEMENT METHODS
***Nicola Giuliani**, Luca Heltai, Andrea Mola*

Tuesday, June 7 **Danae**
17:00-19:00

MS 1001 - 4: STRUCTURAL AND MULTIDISCIPLINARY OPTIMIZATION
MS Organizers: J.F. Aguilar Madeira, Helder C. Rodrigues
Chair: Dirk Roos

6528 ADJOINT OPTIMAL CONTROL PROBLEMS FOR THE FLUID-STRUCTURE INTERACTION SYSTEM
***Filippo Menghini**, Daniele Cerroni, Roberto Da Vià, Sandro Manservisi, Luca Zaniboni*

11579 EFFICIENT PARALLELIZATION OF EVOLUTIONARY ALGORITHMS FOR AEROSPACE STRUCTURAL OPTIMIZATION PROBLEMS
***Andreas Hauffe**, Klaus Wolf*

7083 OPTIMIZATION OF THE STALL CHARACTERISTICS OF AN UNMANNED AERIAL VEHICLE USING WING FENCES
***Jolan Wauters**, Jan Vierendeels, Joris Degroote*

6754 APPLICATION OF WHIRL FLUTTER OPTIMIZATION-BASED SOLUTION TO FULL-SPAN MODEL OF TWIN TURBOPROP AIRCRAFT
Jiri Cecrdle

10142 BENDING STIFFNESS OF A MULTILAYERED PLATE
***Petr Tovstik**, Tatiana M. Tovstik*

Tuesday, June 7 **Europa**
17:00-19:00

CS 410 - 3: COMPUTATIONAL FLUID MECHANICS
Chair: Iurii Polandov

9796 INFLUENCE OF ADJACENT ROOMS ON THE DEVELOPMENT OF GAS EXPLOSION
***Iurii Polandov**, Sergei Dobrikov*

8561 A SHALLOW WATER EQUATION BASED ON DISPLACEMENT AND PRESSURE AND THE ZU-CLASS SYMPLECTIC METHOD
***Feng Wu**, Wan-Xie Zhong*

8820 IMPACT OF EXTERNAL SURROUNDINGS ON NATURAL CONVECTION IN A VERTICAL CHANNEL ASYMMETRICALLY HEATED
***Delphine Ramalingom**, Alain Bastide*

9698 THE EFFECT OF FREE CONVECTION FLOWS IN DIFFUSION EXPERIMENTS OF TERNARY MIXTURES
***Jordi Pallares**, Xavier Ruiz, Josefina Gavalda*

9914 LARGE EDDY SIMULATION OF SALTATION OVER GAUSSIAN HILLS
*Gang Huang, **Catherine Le Ribault**, Serge Simoëns, Ivana Vinkovic, J.M.Vignon*

Tuesday, June 7 **Leda**
17:00-19:00

MS 1101 - 5: REDUCED BASIS, POD AND PGD MODEL ORDER REDUCTION TECHNIQUES

MS Organizers: Francisco Chinesta, Elias Cueto, Antonio Huerta, Pierre Ladeveze, Gianluigi Rozza

Chair: Francisco Chinesta

4668 A MINIMAL SUBSPACE ROTATION APPROACH FOR OBTAINING STABLE AND ACCURATE LOW-ORDER PROJECTION-BASED REDUCED ORDER MODELS FOR NONLINEAR COMPRESSIBLE FLOW
***Irina Tezaur**, Maciej Balajewicz*

6349 HYPER REDUCTION OF NONLINEAR FINITE ELEMENT STRUCTURAL MODELS WITH CONTACT AND FAILURE
***Todd Chapman**, Philip Avery, Charbel Farhat*

7608 NEW LATIN-PGD TECHNIQUE FOR FATIGUE LOADING
***Mainak Bhattacharyya**, David Néron, Pierre Ladevèze, Amélie Fau, Udo Nackenhorst*

11241 AN INVESTIGATION OF INTERPOLATION TECHNIQUES FOR HIGH-PERFORMANCE REDUCED ORDER MODELS IN COMPUTATIONAL HOMOGENIZATION
***Rody A. van Tuijl**, Joris J.C. Remmers, Marc G.D. Geers*

7972 ELECTRICAL FIELDS SIMULATION IN HETEROGENOUS DOMAINS USING THE PROPER GENERALIZED DECOMPOSITION
***Chady Ghnatios**, Francisco Chinesta, Anais Barasinski*

Tuesday, June 7 **Athena**
17:00-19:00

MS 703 - 3: COMPUTATIONAL MECHANICS OF WOOD MATERIALS AND TIMBER STRUCTURES

MS Organizers: Josef Füssl, Josef Eberhardsteiner, Erik Serrano, Michael Kaliske

Chair: Josef Eberhardsteiner

5947 MOISTURE DEPENDENT THERMOMECHANICAL MODELING OF WOOD AND ITS APPLICATION TO WOOD FORMING PROCESSES
***Robert Fleischhauer**, Jad Khodor, Michael Kaliske*

6502 THE EFFECT OF INITIAL GREEN STATE MOISTURE GRADIENTS ON STRESSES IN TIMBER BOARDS DURING DRYING
***Sara Florisson**, Sigurdur Ormarsson*

6690 MULTILEVEL COMPUTATIONAL HOMOGENIZATION OF ARCHAEOLOGICAL OAK FOR ELASTIC AND VISCOELASTIC MATERIAL PROPERTIES
***Nico van Dijk**, Alexey Vorobyev, Gunnar Almkvist, Kristofer Gamstedt*

8448 GEOMETRIC NONLINEAR ANALYSIS OF A PITCHED ROOF STRUCTURE OF WOOD
***Sigurdur Ormarsson**, Johan Vessby*

Tuesday, June 7 **Artemis**
17:00-19:00

MS 113 - 2: MATHEMATICAL AND NUMERICAL MODELING OF THE HEART

MS Organizers: Luca Dede', Luca Pavarino, Alfio Quarteroni

Chair: Luca Dede', Luca Pavarino

5088 ANATOMICALLY ACCURATE HIGH RESOLUTION MODELING OF HUMAN WHOLE HEART ELECTROMECHANICS
*Christoph Augustin, Aurel Neic, **Gernot Plank***

9193 COMPARISON OF TETRAHEDRAL AND HEXAHEDRAL MESHES FOR FINITE ELEMENT SIMULATION OF CARDIAC ELECTRO-MECHANICS
*Bernardo Lino de Oliveira, **Joakim Sundnes***

6449 INFLUENCE OF MECHANO-ELECTRIC FEEDBACKS ON THE CARDIAC BIOELECTRICAL ACTIVITY: A SIMULATION STUDY
*Piero Colli Franzone, Luca F. Pavarino, **Simone Scacchi**, Stefano Zampini*

5311 UTILISATION AND VALIDATION OF A COMPUTATIONAL MODEL FOR CARDIAC ELECTROMECHANICS
***Baris Cansiz**, Michael Kaliske, Krunoslav Sveric, Ruth H. Strasser*

6456 PROXIMAL ISOVELOCITY SURFACE FOR DIFFERENT MITRAL VALVE HOLE GEOMETRIES
***Alexandre This**, Hernán G. Morales, Odile Bonnefous*

Tuesday, June 7 **Aphrodite**
17:00-19:00

MS 104 - 2: GROWTH AND REMODELLING OF LIVING TISSUES IN EXPERIMENT AND SIMULATION

MS Organizers: Antonio Bolea - Albero, Markus Böl

Chair: Antonio Bolea - Albero

7591 MATHEMATICAL MODELLING TO UNDERSTAND AND CONTROL ANGIOGENESIS IN NERVE REGENERATION USING PERIPHERAL NERVE REPAIR CONSTRUCTS
***Rebecca Shipley**, Rachel Coy, Georgina Kennedy, Celine Kayal, Paul Kingham, James Phillips*

7763 MUSCLE GROWTH – AN EXPERIMENTAL STUDY
***Kay Leichsenring**, Tobias Siebert, Markus Böl*

8277 MODELING THE EMERGENCE OF LEAF FORM
***Adam Runions**, Przemyslaw Prusinkiewicz, Miltos Tsiantis*

9955 NUMERICAL MODELING OF BACTERIAL BIOFILM GROWTH BASED ON AN EXPERIMENTAL STUDY
***Dianlei Feng**, Henryke Rath, Insa Neuweiler, Udo Nackenhorst, Nico Stumpp, Meike Stiesch*

Tuesday, June 7 **Antigoni**
17:00-19:00

MS 806 - 3: MULTISCALE MODELLING OF MATERIALS AND STRUCTURES

MS Organizers: Tadeusz Burczyński, Xavier Oliver, Maciej Pietrzyk, Alfredo Huespe

Chair: Alfredo Huespe

10691 A MULTISCALE APPROACH FOR THERMO-MECHANICAL SIMULATIONS OF LOADING COURSES IN CAST IRON BRAKE DISCS
***Christoph Herrmann**, Stefan Schmid, Daniel Schneider, Michael Selzer, Britta Nestler*

10017 MICRO-MACRO RELATIONSHIPS FROM DISCRETE ELEMENT SIMULATIONS OF SINTERING
***Jerzy Rojek**, Piotr Kowalczyk, Szymon Nosewicz, Kamila Jurczak, Krzysztof Wawrzyk*

10057 LEVEL SET AND X-FEM IN MODELING THE RESPONSE OF FIBROUS NETWORKS UNDER HYGROSCOPIC SWELLING.
***Priyam Samantray**, Ron Peerlings, Marc Geers, Thierry Massart*

10511 THE KIRKENDALL AND FRENKEL EFFECTS DURING DIFFUSION

PROCESS - MATHEMATICAL DESCRIPTION
***Stanisław Wędrychowicz**, Bartek Wierzba*

10896 VIRTUAL METALLIC FOAMS. APPLICATION FOR DYNAMIC CRUSHING ANALYSIS
*Ryszard Pęcherski, Marcin Nowak, **Zdzisław Nowak***

Tuesday, June 7 **Apollo East**
17:00-19:00

MS 801 - 2: MULTISCALE COMPUTATIONAL HOMOGENIZATION FOR BRIDGING SCALES IN THE MECHANICS AND PHYSICS OF COMPLEX MATERIALS
MS Organizers: Julien Yvonnet, Kenjiro Terada, Peter Wriggers, Marc Geers
Chair: Karel Matous

9437 **KEYNOTE:** INVESTIGATION OF SELF-HEATING EFFECT IN FIBER-REINFORCED THERMOPLASTIC RESIN BY NUMERICAL MATERIAL TESTING
***Kenjiro Terada**, Seishiro Matsubara*

7679 UNSATURATED CEMENT-BASED MATERIALS HOMOGENIZATION USING DIRECT NUMERICAL SIMULATIONS
***Jean-Luc Delamonte Adia**, Julien Yvonnet, Qi-chang He, Nhu-cuong Tran, Julien Sanahuja*

9708 MULTISCALE NUMERICAL ANALYSIS OF NONLINEAR ELECTRIC PROPERTIES OF GRAPHENE-POLYMER NANOCOMPOSITES
***Xiaoxin Lu**, Julien Yvonnet, Fabrice Detrez, Jinbo Bai*

7670 MULTI-SCALE MODELING OF MULTI-PHYSICS PROCESSES IN LITHIUM ION BATTERY CELLS
***Marco Magri**, Davide Grazioli, Alberto Salvadori*

8603 TOWARDS A STOCHASTIC TIME HOMOGENIZATION METHOD
***Guillaume Puel**, Karam Sab*

Tuesday, June 7 **Apollo West**
17:00-19:00

MS 919 - 3: RECENT ADVANCES IN NUMERICAL SIMULATION AND ANALYSIS OF KINETIC MODELS
MS Organizers: E. Harald van Brummelen, Manuel Torrilhon
Chair: E. Harald van Brummelen

8926 **KEYNOTE:** ACCURATE AND EFFICIENT NUMERICAL SOLUTION OF MOMENT CLOSURES DESCRIBING THREE-DIMENSIONAL VISCOUS AND HEAT-CONDUCTING GASEOUS FLOWS
***Clinton Groth**, Chris Lam, Boone Tensuda*

11764 MESHFREE "DIRECT SIMULATION MONTE CARLO" WITH RADIAL BASIS FUNCTIONS
Benjamin Seibold

11800 LOCAL VELOCITY GRIDS FOR DETERMINISTIC SIMULATIONS OF RAREFIED FLOWS
***Luc Mieussens**, Stéphane Brull, Louis Forestier-Coste*

12895 A NEW CONSERVATIVE MULTISPECIES BGK MODEL
***Jeff Haack**, Michael Murillo, Cory Hauck*

Tuesday, June 7 **Room 1**
17:00-19:00

MS 1202 - 3: ADVANCED BEAM MODELS
MS Organizers: Dinar Camotim, Zuzana Dimitrovová, Rodrigo Gonçalves
Chair: Dinar Camotim

11208 EXTENDED FORMULA FOR A CRITICAL VELOCITY OF A LOAD MOVING ON A BEAM SUPPORTED BY A FINITE DEPTH FOUNDATION
Zuzana Dimitrovová

10221 DYNAMICS OF WIND TURBINE BLADES USING A GEOMETRICALLY-EXACT BEAM FORMULATION
*Celso Faccio Junior, **Alfredo Gay Neto***

8004 REFINED 1D FINITE ELEMENTS FOR THIN-WALLED CURVED STRUCTURES
*Marco Petrolo, **Alberto Garcia de Miguel**, Alfonso Pagani, Erasmo Carrera*

7143 A CO-ROTATIONAL NONLINEAR THREE DIMENSIONAL BEAM ELEMENT FOR THE ANALYSIS OF STEEL STRUCTURES SUBJECTED TO FIRE
***Andrea Morbioli**, Jean-Marc Battini, Nicola Tondini*

8977 A COROTATIONAL FINITE ELEMENT TO MODEL BENDING VIBRATIONS OF METALLIC STRANDS
Francesco Foti

10003 A DEGENERATE-CONTINUUM BASED TIMOSHENKO BEAM APPROACH FOR THE AEROELASTIC ANALYSIS OF THE WIND TURBINE BLADES
***Anthoula Panteli**, Dimitris Manolas, Konstantinos Spiliopoulos*

Tuesday, June 7 **Room 2**
17:00-19:00

MS 305 - 2: ADVANCED MESHING METHODS FOR INDUSTRIAL APPLICATIONS
MS Organizers: Frederic Alauzet, Thierry Coupez, Alain Dervieux, Adrien Loseille
Chair: Frederic Alauzet

10282 ON A HIGH ORDER ANISOTROPIC ADAPTIVE MESHING FRAMEWORK
Thierry Coupez

7712 MESHING OCEAN DOMAINS FOR COASTAL ENGINEERING APPLICATIONS
***Alexandros Avdis**, Christian Jacobs, Simon Mouradian, Jon Hill, Matthew Piggott*

7965 HIGH-ORDER TRACKING METHOD FOR THE SIMULATION OF BURNING FRONTS IN 3D
***Denis Gueyffier**, Bastien Andrieu*

8416 ANISOTROPIC NORM-ORIENTED MESH ADAPTATION FOR COMPRESSIBLE NAVIER-STOKES EQUATIONS
***Loïc Frazza**, Adrien Loseille, Frédéric Alauzet*

Tuesday, June 7 **Room 3**
17:00-19:00

STS 1: THE CAERO2 PLATFORM: DISSEMINATION OF COMPUTATIONAL CASE STUDIES IN AERONAUTICS

STS Organizers: Pedro Diez, Jacques Periaux, Sara Guttilla
Chair: Pedro Diez, Jacques Periaux

16391 TRANSITION EFFECT ON A SHOCK-WAVE / BOUNDARY LAYER INTERACTION
Reynald Bur

16392 HIGH ORDER DISCONTINUOUS GALERKIN METHODS FOR THE SIMULATIONS OF INTERNAL AND EXTERNAL TURBULENT FLOWS
Vincent Couaillier

16400 A COMMON PLATFORM FOR VALIDATION OF AIRCRAFT DRAG REDUCTION TECHNOLOGIES
Daniel Redondo

16398 DRAG REDUCTION FOR THREE DIMENSIONAL WING AT TRANSONIC SPEED
Ning Qin

16396 AERO-THERMAL ANALYSIS OF COMBUSTOR/TURBINE INTERACTION IN AERO-ENGINES: THE CHALLENGE OF TODAY
Francesco Martelli, ***Paolo Adami****, Raul Vazquez*

16395 THE ROLE OF ERCOFTAC TOWARDS THE EUROPEAN AERONAUTICAL AND ENVIRONMENTAL OBJECTIVES; SUPPORTING ADVANCED SIMULATIONS
Charles Hirsch

Tuesday, June 7 **Room 4**
17:00-19:00

CS 212 - 3: NUMERICAL MODELING OF DAMAGE, FAILURE AND FRACTURE

Chair: Marco Paluszny

10838 B-SPLINE RULED SURFACE REPRESENTATION OF FRACTURES FOR THREE-DIMENSIONAL ISOGEOMETRIC GROWTH MODELING
Adriana Paluszny, ***Marco Paluszny***

8703 THEORETICAL STUDY ON EJECTA PRODUCTION FROM METAL SURFACE UNDER SHOCK LOADING
Pei Wang

11666 DISCRETE ELEMENT MODELLING OF A RAMMED EARTH WALL UNDER SHEAR LOADING
Fatima Al-Hout*, Trung Bui, Ali Limam,*

10786 ANALYTICAL SOLUTION FOR DYNAMIC FRACTURE OF TWO COPLANAR LIMITED-PERMEABLE CRACKS IN MAGNETO-ELECTRO-ELASTIC MATERIAL
Peiwei Zhang

10148 DYNAMIC ENERGY RELEASE RATES IN RUBBER
Martin Kroon

9907 A HIGHER ORDER PHASE-FIELD APPROACH TO FRACTURE FOR FINITE-DEFORMATION CONTACT PROBLEMS
Marlon Franke*, Christian Hesch, Maik Dittmann*

Tuesday, June 7 **Room 5**
17:00-19:00

CS 460 - 3: UNSTEADY FLOW COMPUTATION

Chair: Hans-Peter Kersken

7406 A HYBRID MESH HARMONIC BALANCE SOLVER FOR THE AEROELASTIC ANALYSIS OF TURBOMACHINERY
Hans-Peter Kersken*, Graham Ashcroft, Christian Frey*

7447 NUMERICAL AND EXPERIMENTAL INVESTIGATIONS OF DYNAMIC STALL PROBLEM ON A 2D HELICOPTER ROTOR BLADE SECTION
Antonello Marino, ***Serena Russo****, Giovanni Paolo Reina, Gennaro Esposito,* ***Francesco Capizzano,*** *Carlo De Nicola*

7637 HIGH-ORDER TIME INTEGRATION NUMERICAL METHOD BY ADOMIAN DECOMPOSITION METHOD AND SIMPLE METHOD COUPLING FOR INCOMPRESSIBLE EULER EQUATIONS
Imanol Garcia-Beristain*, Lakhdar Remaki*

7762 DUAL TIME STEPPING AND NLFD SCHEMES FOR AIRFOIL BUFFET CALCULATIONS
Frédéric Plante*, Ali Mosahebi, Antoine Lévesque, Éric Laurendeau*

8178 IMMERSED BOUNDARY METHOD AND ASYMPTOTIC NUMERICAL METHOD FOR TRANSIENT SIMULATION OF INCOMPRESSIBLE VISCOUS FLOW AROUND MOVING OBSTACLE
Monnier Antoine*, Cadou Jean-Marc, Girault Grégory*

5411 CONSISTENT NON-REFLECTING BOUNDARY CONDITIONS FOR BOTH STEADY AND UNSTEADY FLOW SIMULATIONS IN TURBOMACHINERY APPLICATIONS
Daniel Schlüß*, Christian Frey, Graham Ashcroft*

Tuesday, June 7 **Room 7**
17:00-19:20

MS 1214 - 3: HISTORIC MASONRY STRUCTURES: MODELLING, ASSESSMENT & RETROFIT

MS Organizers: Panagiotis Asteris, Charilaos Maniatakis, Constantine Spyrakos
Chair: Panagiotis Asteris

8924 FINITE-DISCRETE ELEMENT MODELLING OF MASONRY INFILL WALLS SUBJECTED TO OUT-OF-PLANE LOADS
Laura Liberatore*, Marta Bruno, Omar Al Shawa, Monica Pasca, Luigi Sorrentino*

10714 NUMERICAL VALIDATION OF EQUIVALENT-FRAME MODELS FOR URM WALLS
Rossella Siano, Guido Camata, ***Vincenzo Sepe****, Enrico Spacone, Pere Roca Fabregat, Luca Pelà*

12273 BEHAVIOR OF SINGLE STORY BEARING WALL MASONRY STRUCTURES IN VARIOUS CONDITIONS
Abdelraouf Kassem

11793 THE ROLE OF RESTORATION MORTARS IN THE EARTHQUAKE PROTECTION OF KAISARIANI MONASTERY
Antonia Moropoulou, ***Maria Apostolopoulou****, Petros Moundoulas, Eleni Aggelakopoulou, Louiza Siouta, Asterios Bakolas, Panagiotis G. Asteris, Panagiotis Karakitsios, Maria Douvika*

11937 FIRST RESULTS OF THE VIBRATION-BASED STRUCTURAL HEALTH MONITORING OF A MASONRY DOME
Nicola Cavalagli*, Gabriele Comanducci, Massimiliano Gioffrè, Vittorio Gusella, Filippo Ubertini*

4938 SIMPLE CLOSED FORM HOMOGENIZATION MODEL FOR THE NON LINEAR STATIC AND DYNAMIC ANALYSIS OF RUNNING BOND MASONRY WALLS IN AND OUT OF PLANE LOADED
Gabriele Milani, ***Elisa Bertolesi***

9117 PALAZZO LA SAPIENZA IN PISA: STRUCTURAL ASSESSMENT AND RETROFIT OF AN HISTORICAL MASONRY BUILDING IN ITALY
Silvia Caprili*, Federico Mangini, Nicola Mussini, Walter Salvatore*

Tuesday, June 7 **Room 8**
17:00-19:00

CS 110 - 5: NUMERICAL MODELS IN BIOMECHANICS
Chair: Mihai Dupac

4413 EVALUATION OF ANGULAR KINEMATICS OF LOWER LIMB AMPUTEES USING QUANTITATIVE FLUOROSCOPIC IMAGING
Alexander Breen, ***Mihai Dupac***

6069 NUMERICAL INVESTIGATION ON THE OSSEOINTEGRATION OF DENTAL IMPLANT UNDER CONSIDERATION OF ELECTROMECHANICAL STIMULATION IN BONE-IMPLANT INTERFACE
Seyedalireza Shirazibeheshtiha*, Udo Nackenhorst*

7408 FE BONE STRUCTURAL ANALYSIS WITH CT MAPPING OF INHOMOGENEOUS MATERIAL PROPERTIES
Miguel Tobias Bahia*, Emílio Graciliano Ferreira Mercuri, Mildred Ballin Hecke*

8753 SIMULATING FATIGUE IN MUSCULOSKELETAL MODELS USING SURFACE ELECTROMYOGRAPHY
Simon Gross*, Franz Suess, Gijsbertus Verkerke, Sebastian Dendorfer*

8296 DIGITAL IMAGE CORELLATION AND NANOINDENTATION IN EVALUATION OF CONSTITUTIVE RELATIONSHIPS FOR CORTICAL BONE MICROSTRUCTURE
Grzegorz Kokot*, Witold Ogierman, Konstanty Skalski, Marek Pawlikowski*

Tuesday, June 7 **Room 9**
17:00-19:00

MS 1217 - 1: COMPUTATIONAL METHODS IN EARTHQUAKE ENGINEERING AND STRUCTURAL DYNAMICS
MS Organizers: Vagelis Plevris, Georgia Kremmyda, Yasin Fahjan
Chair: Vagelis Plevris

11846 STRUCTURAL DAMAGE IDENTIFICATION USING INCOMPLETE MODAL DATA WITH NATURE-INSPIRED OPTIMIZATION ALGORITHMS
Manolis Georgioudakis, ***Vagelis Plevris***

7522 FINITE-DISCRETE NUMERICAL MODELLING OF REINFORCED CONCRETE STRUCTURES
Nikolina Zivaljic*, Zeljana Nikolic, Hrvoje Smoljanovic, Ivan Balic*

10015 A PROBABILISTIC APPROACH TOWARDS AN EVALUATION OF EXISTING CODE PROVISIONS FOR SEISMICALLY ISOLATED STRUCTURES
Anastasios Tsiavos*, Bozidar Stojadinovic*

11240 NUMERICAL NON-LINEAR SIMULATION OF THE IN-PLANE BEHAVIOUR OF R/C FRAMES WITH MASONRY INFILLS UNDER SEISMIC TYPE LOADING
George Manos, ***Vasilios Soulis***

11844 MODELING THE MECHANICAL RESPONSE OF A LEAD-CORE BEARING DEVICE: DAMAGE MECHANICS APPROACH
Todor Zhelyazov, ***Rajesh Rupakhety****, Simon Olafsson*

11965 SEISMIC RESPONSE OF LIQUID-CONTAINING TANKS WITH EMPHASIS ON THE HYDRODYNAMIC DISTRESS AND GROUND MOTION CHARACTERISTICS
Marina E. Kalogerakou*, Charilaos A. Maniatakis, Constantine C. Spyrakos, Prodromos N. Psarropoulos*

Tuesday, June 7 **Room 10**
17:00-19:20

MS 1212 - 2: DYNAMICS AND SEISMIC RESPONSE OF ROCKING AND SELF-CENTERING STRUCTURES
MS Organizers: Matthew DeJong, Elias Dimitrakopoulos, Michalis Fragiadakis
Chair: Michalis Fragiadakis, Elias Dimitrakopoulos

11424 PARAMETRIC INVESTIGATION OF THE DYNAMIC RESPONSE OF RIGID BLOCKS SUBJECTED TO SYNTHETIC NEAR-SOURCE GROUND MOTION RECORDS
Michalis Fragiadakis*, Ioannis Psycharis, George P. Mavroeidis*

9386 A SIMPLE ANALYTICAL MODEL FOR THE ROCKING PREWEC SYSTEM
Dimitrios Kalliontzis*, Sri Sritharan*

10112 AN ANALYTICAL MODEL FOR DYNAMIC RESPONSE OF AN ELASTIC SDOF SYSTEM FIXED ON TOP OF A ROCKING SINGLE-STORY FRAME STRUCTURE: EXPERIMENTAL VALIDATION
Jonas A. Bachmann*, Christoph Jost, Quentin Studemann, Michalis F. Vassiliou, Bozidar Stojadinovic*

8384 MODELLING CONTACT IN ROCKING STRUCTURES WITH A NONSMOOTH DYNAMICS APPROACH
Anastasios I. Giouvanidis, ***Elias G. Dimitrakopoulos***

9376 ENERGY DISSIPATION COMPONENTS IN UNBONDED POST-TENSIONED SINGLE ROCKING WALLS
Maryam Nazari, ***Sri Sritharan***

9563 QUASI-STATIC TESTING OF A LARGE-SCALE PRE-CAST BRIDGE WITH CONTROLLED ROCKING POST-TENSIONED CONNECTIONS IN THE SUPERSTRUCTURE
Zeinab Chegini*, Alessandro Palermo*

8340 THE ROLE OF THE PRESTRESSED TENDONS ON THE SEISMIC PERFORMANCE OF HYBRID ROCKING BRIDGE BENTS
Anastasios I. Giouvanidis*, Elias G. Dimitrakopoulos*

Tuesday, June 7 **Room 11**
17:00-19:00

CS 1201: COMPUTATIONAL SOIL MECHANICS
Chair: Stefano Dal Pont

11824 FEMXDEM MULTI-SCALE REAL-SCALE MODELLING APPLIED TO GEOMATERIALS
Albert Argilaga, Jacques Desrues, ***Stefano Dal Pont****, Gael Combe, Danis Caillerie*

10987 INFLUENCES OF PHYSICAL AND STATISTICAL PARAMETERS OF RANDOM HETEROGENEOUS MEDIA ON SPATIAL VARIABILITY OF SEISMIC GROUND MOTIONS
Angkeara Svay*, Didier Clouteau, Irmela Zentner, Régis Cottereau*

8409 NUMERICAL SIMULATION OF FREEZING PROCESS OF SOIL IN BACK FILLED CHAMBER WITH A BURIED PIPE
Hosung Shin

7331 THREE-DIMENSIONAL BE-FE MODEL OF BUCKET FOUNDATIONS IN POROELASTIC SOILS
Jacob D. R. Bordón*, Juan J. Aznárez, Orlando F. Maeso*

6739 A MORE COMPREHENSIVE MODELING OF CONTACT FORCE DURING SHEAR TESTING USING DEM
***Varvara Roubtsova**, Mohamed Chekired*

Tuesday, June 7 **Room 12**
17:00-19:20

MS 1206 - 3: ADVANCES IN NUMERICAL METHODS FOR LINEAR AND NON-LINEAR DYNAMICS AND WAVE PROPAGATION
MS Organizer: Alexander Idesman
Chair: Alexander Idesman

10435 AN H-MATRIX BASED DIRECT SOLVER FOR BOUNDARY ELEMENT METHOD IN 3D ELASTODYNAMICS
*Stéphanie Chaillat, Patrick Ciarlet, **Luca Desiderio***

9453 INCOMPATIBLE MODES IN EXPLICIT DYNAMICS – EFFICIENCY, POSSIBILITIES AND LIMITS
***Christoph Schmied**, Steffen Mattern, Karl Schweizerhof*

4970 RAYLEIGH METHOD APPLIED TO A 46-M-HIGH CONCRETE MAST
***Alexandre de M. Wahrhaftig**, Reyolando M. L. R. F. Brasil*

4588 ASYMPTOTIC IMPACT BEHAVIOR OF GOUPILLAUD-TYPE LAYERED ELASTIC MEDIA
***George Gazonas**, Ani Velo, Raymond Wildman*

9176 A DISPERSION MINIMIZED MIMETIC METHOD FOR ACOLD PLASMA MODEL
*Vrushali A. Bokil, **Vitaliy Gyrya**, Duncan A. McGregor*

10729 THERMOMECHANICAL NUMERICAL SIMULATION OF IMPACTS ON ELASTIC-PLASTIC SOLIDS WITH THE FINITE VOLUME METHOD
Thomas Heuzé

Tuesday, June 7 **Room 15**
17:00-19:00

CS 930 - 4: HIGH-ORDER DISCRETIZATION METHODS
Chair: Alberto Costa Nogueira Junior

8319 ON THE CHOICE OF SHOCK CAPTURING SCHEMES FOR THE SOLUTION OF THE LWR TRAFFIC FLOW EQUATION USING A HIGH ORDER MODAL DISCONTINUOUS GALERKIN DISCRETIZATION
***Alberto Costa Nogueira Junior**, João Lucas de Sousa Almeida, Cláudio Alessandro de Carvalho Silva*

11923 HYBRID RIEMANN SOLVERS FOR LARGE SYSTEMS OF CONSERVATION LAWS
***Birte Schmidtmann**, Mariia Astrakhantceva, Manuel Torrilhon*

7193 A 3D ISOGEOMETRICAL BOUNDARY ELEMENT ANALYSIS FOR NON-LINEAR GRAVITY WAVE PROPAGATION
***Jorge Maestre**, Jordi Pallarés, Ildefonso Cuesta*

9211 NONLINEAR RESIDUAL-BASED VISCOSITIES FOR ADAPTIVE STABILIZED FINITE ELEMENT METHODS IN TURBULENT FLOW PROBLEMS
***Aurélien Larcher**, Murtazo Nazarov*

9356 ADAPTIVE TIME STEPPING AND REFINED EXPLICIT INTEGRATION WITH EMBEDDED ERROR CONTROL FOR NUMERICAL MODELLING OF SALT CREEP
***Roberto Quispe**, Pedro Firme, Deane Roehl*

Tuesday, June 7 **Room 17**
17:00-19:00

CS 1300 - 1: UNCERTAINTY QUANTIFICATION AND ERROR ESTIMATION
Chair: Guillermo Hauke

5657 POINTWISE ERROR ESTIMATION FOR LINEAR PARTIAL DIFFERENTIAL EQUATIONS BASED ON THE VARIATIONAL MULTISCALE THEORY
***Guillermo Hauke**, Diego Irisarri*

8838 AN EFFICIENT AERODYNAMIC SHAPE OPTIMIZATION FRAMEWORK FOR ROBUST DESIGN OF AIRFOILS USING SURROGATE MODELS
***Daigo Maruyama**, Dishi Liu, Stefan Görtz*

10644 UNCERTAINTY QUANTIFICATION BY THE POLYNOMIAL CHAOS EXPANSION METHOD WITH ORDER ADJUSTMENT
Koji Shimoyama

10011 COMPARISON BETWEEN A POLYNOMIAL CHAOS SURROGATE MODEL AND MARKOV CHAIN MONTE CARLO FOR INVERSE UNCERTAINTY QUANTIFICATION BASED ON AN ELECTRIC DRIVE TEST BENCH
***Philipp Glaser**, Michael Schick, Kosmas Petridis, Vincent Heuveline*

8533 MIASC: AN ADAPTIVE APPROACH TO UNCERTAINTY QUANTIFICATION IN DISCRETIZED PROBLEMS OF REDUCED REGULARITY - PART 1: ILLUSTRATION OF THE METHOD
***Robert L. Gates**, Maximilian R. Bittens, Udo Nackenhorst*

Tuesday, June 7 **Room 18**
17:00-19:00

MS 1007 - 1: ADDITIVE MANUFACTURING AND OPTIMIZATION
MS Organizers: Ekkehard Ramm, Ole Sigmund, Pierre Duysinx, Wing Kam Liu
Chair: Ole Sigmund, Paolo Venini

7545 **KEYNOTE:** INDUSTRIAL ADDITIVE MANUFACTURING AND DESIGNING
***Claus B.W. Pedersen**, James Fort, Peter M. Clausen, Subham Sett*

5873 TOPOLOGY OPTIMIZATION FOR ADDITIVE MANUFACTURING WITH CONTROLLABLE SUPPORT STRUCTURE COSTS
Matthijs Langelaar

8988 TOPOLOGY OPTIMIZATION FOR ADDITIVE MANUFACTURING: ACCOUNTING FOR OVERHANG LIMITATIONS USING A VIRTUAL SKELETON
*Yoram Mass, **Oded Amir***

5120 SHAPE AND TOPOLOGY OPTIMIZATION ACCOUNTING FOR ADDITIVE MANUFACTURING CONSTRAINTS: INFLUENCE OF THE BUILD DIRECTION IN POWDER-BINDING TECHNOLOGIES
***Grégoire Allaire**, Charles Dapogny, Rafael Estevez, Alexis Faure, Georgios Michailidis, Guillaume Parry*

5725 TOPOLOGY OPTIMIZATION FOR MANUFACTURING WITH OPTICAL MICROLITHOGRAPHY
***Mingdong Zhou**, Boyan S. Lazarov, Ole Sigmund*

Tuesday, June 7 **Room 20**
17:00-19:00

MS 116: MULTISCALE & MULTILEVEL MODELING IN DETOXIFYING ORGANS AND ORGANS OF THE DIGESTIVE TRACT

MS Organizers: Dirk Drasdo, Irene Vignon-Clementel
Chair: Dirk Drasdo, Irene Vignon-Clementel

11408 IMAGING AND MODELLING THE BLOOD CIRCULATION THROUGH THE LIVER AND KIDNEY
***Charlotte Debbaut**, Diethard Monbaliu, Geert Peeters, Patrick Segers*

5384 A MULTILEVEL FRAMEWORK TO STUDY THE ALTERING HEPATIC CIRCULATION IN CIRRHOTIC RATS.
***Geert Peeters**, Charlotte Debbaut, Pieter Cornillie, Winnok De Vos, Thomas De Schryver, Diethard Monbaliu, Wim Laleman, Patrick Segers*

7859 AMMONIA DETOXIFICATION IN THE LIVER AFTER PARTIAL HEPATECTOMY
***Noemie Boissier**, Geraldine Celliere, Irene Vignon-Clementel, Dirk Drasdo*

9083 ANALYSING DRUG-INDUCED LIVER INJURY WITHIN A WHOLE-BODY CONTEXT
***Lars Kuepfer**, Christoph Thiel, Henrik Cordes, Lars M. Blank*

7436 MODELING TOOLS FOR WHOLE LIVER HEMODYNAMICS AND FUNCTION DURING PARTIAL HEPATECTOMY
***Chloe Audebert**, Eric Vibert, Jean-Frédéric Gerbeau, Irene Vignon-Clementel*

Tuesday, June 7 **Room 21**
17:00-19:00

MS 404 - 2: SIMULATION OF ENVIRONMENTAL FLOWS

MS Organizers: Pablo Ortiz, Piotr K. Smolarkiewicz, Joanna Szmelter
Chair: Pablo Ortiz

4852 A HYBRID ALL-SCALE FINITE-VOLUME MODULE FOR GLOBAL WEATHER PREDICTION
***Piotr Smolarkiewicz**, Willem Deconinck, Mats Hamrud, Christian Kuehnlein, George Mozdzynski, Joanna Szmelter, Nils Wedi*

7716 ATLAS, A PARALLEL FRAMEWORK FOR EARTH SYSTEM MODELLING
Willem Deconinck

9292 FINITE ELEMENT METHODS FOR 3D SIMULATION OF WAVE AND CURRENT INTERACTION WITH GRANULAR MEDIA
***Chris Kees**, Aggelos Dimakopoulos, Matthew Farthing*

6606 AN UNSTRUCTURED MESH MODEL FOR STRATIFIED OROGRAPHIC FLOWS
***Mike Gillard**, Joanna Szmelter, Zhao Zhang, Piotr Smolarkiewicz*

7077 SIMULATION OF SOUNDPROOF FLOWS PAST A SPHERE
***Zhi Xin Cao**, Joanna Szmelter, Zhao Zhang, Piotr K Smolarkiewicz*

Tuesday, June 7 **Room 22**
17:00-19:00

CS 960 - 2: MESHLESS METHODS

Chair: Christian Weißenfels

7025 OPTIMAL TRANSPORTATION MESHFREE APPROXIMATION SCHEME BASED ON MEAN VALUE COORDINATES
***Christian Weißenfels**, Peter Wriggers*

7064 THREE-DIMENSIONAL CRACK PROPAGATION ANALYSIS USING MESHLESS POINT COLLOCATION METHOD
Eiji Tanaka

10975 ANALYSIS OF NON-NEWTONIAN FLUID FLOW AND HEAT TRANSFER IN AN INTERNALLY FINNED SQUARE CHANNEL
***Jakub K. Grabski**, Jan A. Kołodziej*

9519 A CELL-BASED SMOOTHED MESHFREE METHOD FOR AXISYMMETRIC PROBLEMS IN SATURATED MEDIA
***Arash Tootoonchi**, Arman Khoshghalb, Nasser Khalili*

11774 EFFICIENT SHAPE FUNCTIONS EVALUATION OF EFG MESHLESS METHOD
***Panos Metsis**, Manolis Papadrakakis*

12055 BLOCK-WISE ASSEMBLY OF GAUSS QUADRATURE-BASED MATRICES
***Alexander Karatarakis**, Manolis Papadrakakis*

TECHNICAL SESSIONS

Wednesday, June 8 **Zeus East**
8:30-10:30

MS 106 - 2: DIRECT AND INVERSE METHODS FOR CARDIOVASCULAR AND PULMONARY BIOMECHANICS

MS Organizers: Wolfgang A. Wall, C. Alberto Figueroa, Marek Behr
Chair: Stephane Avril

8947 A DECONVOLUTION-BASED LES METHOD FOR INCOMPRESSIBLE FLOWS AT MODERATELY LARGE REYNOLDS NUMBERS
*Luca Bertagna, **Annalisa Quaini**, Alessandro Veneziani*

10106 NUMERICAL MODELING OF COMPENSATION MECHANISMS FOR PERIPHERAL ARTERIAL STENOSES
***Tobias Köppl**, Rainer Helmig, Barbara Wohlmuth, Daniel Drzisga, Ulrich Pohl*

7336 INVESTIGATING FLOW UNSTEADINESS IN REALISTIC AND OPTIMISED ARTERIO-VENOUS FISTULAE
***Lorenza Grechy**, Francesco Iori, Richard W Corbett, Wladyslaw M W Gedroyc, Neill Duncan, Colin G Caro, Peter E Vincent*

6985 NUMERICAL METHODS FOR THE OCULAR HEMODYNAMICS
***Matteo Aletti**, Jean-Frédéric Gerbeau, Damiano Lombardi*

7462 A TREE-PARENCHYMA LUNG MODEL: NUMERICAL SCHEMES AND APPLICATIONS
***Nicolas Pozin**, Spyridon Montesantos, Georges Caillibotte, Marine Pichelin, Irène Vignon-Clementel, Celine Grandmont*

9636 ON THE IMPROVEMENT OF A PHYSIOLOGICAL BLOOD DAMAGE MODEL FOR HEMOLYSIS PREDICTIONS IN MEDICAL DEVICES
***Stefan Haßler**, Lutz Pauli, Marek Behr*

Wednesday, June 8 **Zeus West**
8:30-10:30

MS 112 - 3: ANEURYSMS: SOLID MECHANICS, FLUID MECHANICS, AND MECHANOBIOLOGY

MS Organizers: Christian J. Cyron, Sven Hirsch, Philippe Bijlenga, Roland C. Aydin, Anne M. Robertson, Gerhard A. Holzapfel
Chair: Sven Hirsch, Anne M. Robertson

5993 **KEYNOTE:** CONNECTING THE LOCAL HEMODYNAMIC CONDITIONS TO THE WALL STRUCTURE IN HUMAN CEREBRAL ANEURYSMS
***Juan Cebral**, Xinjie Duan, Bongjae Chung, Fernando Mut, Khaled Aziz, Anne Robertson*

7889 ROLES OF TGF-ß AND DYNAMIC STRETCHING ON FIBROBLASTS
*Siddhartha Jaddivada, Merchant Nandan, Shaktidhar Dandapani, Paturu Kondaiah, Paul Watton, **Namrata Gundiah***

8181 MECHANICS AND MICROSTRUCTURE OF HEALTHY HUMAN AORTAS AND AAA TISSUES: EXPERIMENTAL ANALYSIS AND MODELING
***Justyna A. Niestrawska**, T.U. Cohnert, G.A. Holzapfel*

7902 IN VIVO CONSTITUTIVE PARAMETER IDENTIFICATION OF THE INDIVIDUAL AAA WALL BASED ON 4D ULTRASOUND STRAIN IMAGING DATA
***Andreas Wittek**, Claus-Peter Fritzen, Christopher Blase*

5492 EFFECT OF CALCIFICATION ON ANEURYSM STRENGTH
***Konstantin Volokh**, Jacob Aboudi*

Wednesday, June 8 **Zeus North**
8:30-10:30

MS 901 - 3: ISOGEOMETRIC METHODS

MS Organizers: Yuri Bazilevs, David J. Benson, Rene De Borst, Thomas J.R. Hughes, Trond Kvamsdal, Alessandro Reali, Giancarlo Sangalli, Clemens V. Verhoosel
Chair: Alessandro Reali

11265 AN ISOGEOMETRIC ANALYSIS INVESTIGTION FOR MULTIPHYSICS FORMULATIONS AT LARGE STRAINS
*Lei Zhang, Stéphane Lejeune, **Dominique Eyheramendy***

6165 ANALYSIS OF LAMINATED COMPOSITE PLATES USING ISOGEOMETRIC COLLOCATION METHOD
***G S Pavan**, K S Nanjunda Rao*

11975 HIERARCHICAL H-REFINEMENT IN ISOGEOMETRIC ANALYSIS WITH NURBS
***Manos Trypakis**, Manolis Papadrakakis*

6689 ADAPTIVE ISOGEOMETRIC ANALYSIS OF PHASE-FIELD MODELS
***Markus Kästner**, Paul Hennig, Philipp Metsch*

9227 AN IMPLICIT TIME INTEGRATION HIGH-ORDER MATERIAL POINT METHOD FOR SMALL AND LARGE DEFORMATION PROBLEMS: FORMULATION AND ANALYSIS WITHIN THE ISOGEOMETRIC FRAMEWORK
***Yousef Ghaffari Motlagh**, William M. Coombs*

7502 MODELLING STIFFENED LIGHTWEIGHT STRUCTURES WITH ISOGEOMETRIC ANALYSIS VIA MORTAR METHODS
***Malte Woidt**, Kay Sommerwerk, Matthias C. Haupt, Peter Horst*

Wednesday, June 8 **Minos East**
8:30-10:30

MS 1101 - 6: REDUCED BASIS, POD AND PGD MODEL ORDER REDUCTION TECHNIQUES

MS Organizers: Francisco Chinesta, Elias Cueto, Antonio Huerta, Pierre Ladeveze, Gianluigi Rozza
Chair: Antonio Huerta

11144 A NEW PGD APPROACH FOR PARAMETRIZED PROBLEMS INCLUDING POSITIONAL PARAMETERS
***David Néron**, Pierre Ladevèze, Amaury Courard*

7816 HIPOD: A POD-BASED HIERARCHICAL MODEL REDUCTION FOR INVERSE PROBLEMS IN FLUID DYNAMICS
*Cristina Cova, Massimiliano Lupo Pasini, **Simona Perotto**, Lorenzo Sala, Alessandro Veneziani*

6076 AN ITERATIVE MODEL ORDER REDUCTION SCHEME FOR A SPECIAL CLASS OF BILINEAR DESCRIPTOR SYSTEMS APPEARING IN CONSTRAINT CIRCUIT SIMULATION
***Pawan Goyal,** Peter Benner*

6579 POD-BASED ''VIRTUAL CHARTS'' FOR PARAMETRIC STUDIES OF WELDING PROCESSES
***Ye Lu**, Nawfal Blal, Anthony Gravouil*

5891 REDUCED BASIS METHOD FOR POISSON-BOLTZMANN EQUATION
*Peter Benner, Lihong Feng, Martin Hess, **Cleophas Kweyu**, Matthias Stein*

Wednesday, June 8 **Minos North**
8:30-10:30

MS 301 - 4: METHODS FOR CUT AND COMPOSITE MESHES: THEORY, ALGORITHMS AND APPLICATIONS

MS Organizers: Mats G. Larson, André Massing
Chair: Mats G. Larson

7955 MULTIMESH: FEM ON ARBITRARILY MANY INTERSECTING MESHES
***August Johansson**, Benjamin Kehlet, Mats G Larson, Anders Logg*

8247 HIGH-ORDER FINITE VOLUME METHODS FOR HYPERBOLIC PDES ON CARTESIAN GRIDS WITH EMBEDDED BOUNDARIES
Christiane Helzel

9191 MASS CONSERVATION FOR UNFITTED DG CUT-CELL METHODS ON EVOLVING DOMAINS
***Christian Engwer**, Sebastian Westerheide*

7609 SIMULATION OF DEFORMATION AND FLOW IN FRACTURED, POROELASTIC MATERIALS
***Katja Hanowski**, Oliver Sander*

Wednesday, June 8 **Minos South**
8:30-10:30

CS 500 - 2: HIGH PERFORMANCE COMPUTING

Chair: Victor Demidovich

11986 APPLICATION THE SPARSE MATRIX METHOD TO CALCULATE THE METAL ELASTIC STRESS-STRAIN STATE, USING THE FINITE ELEMENT METHOD
*Inna Barankova, Uliana Mikhailova, **Victor Demidovich***

11267 PARALLEL BOUNDARY ELEMENT FORMULATION FOR 2D MICROFLUIDIC PARTICULATE FLOW FOR MULTI-THREADED ARCHITECTURES
*Süleyman D. Öner, Ali Karakuş, Barbaros Çetin, **Besim Baranoğlu***

11627 HIGH ORDER DISCONTINUOUS GALERKIN COMPUTATIONS ON NUMA ARCHITECTURES
***Vincent Bertrand**, Jonathan Lambrechts, Jean-François Remacle, Axel Modave, Koen Hillewaert*

6151 PERFORMANCE AND SCALABILITY OF FETI METHODS FOR HETEROGENEOUS DYNAMIC PROBLEMS WITH DIFFERENT COARSE-GRIDS
***Michael Leistner**, Alejandro Cosimo, Daniel Rixen*

8496 IRREGULAR SHAPED PARTICLES FOR DEM HIGH PERFORMANCE ALGORITHMS
***Eva Siegmann**, Charles Radeke, Gundolf Haase, Johannes G. Khinast*

4638 PARALLEL AND VECTORIZED CODE FOR CSEM SURVEYS IN GEOPHYSICS: AN EDGE-BASED APPROACH
***Octavio Castillo Reyes**, Josep de la Puente, Hélène Barucq, Julien Diaz, José María Cela*

Wednesday, June 8 **Danae**
8:30-10:30

MS 923 - 1: NOVEL DISCRETIZATION METHODS – MATHEMATICAL AND MECHANICAL ASPECTS

MS Organizers: Jörg Schröder, Peter Wriggers, Ferdinando Auricchio, Carsten Carstensen
Chair: Jörg Schröder

11849 AXIOMS OF ADAPTIVITY: RATE OPTIMALITY OF ADAPTIVE ALGORITHMS WITH SEPARATE MARKING
***Carsten Carstensen**, Hella Rabus*

7491 ALTERNATIVE TO RETURN -MAPPING ALGORITH FOR COMPUTING PLASTIC STRAIN. APPLICATION TO DILATANT MATERIALS.
Siegfried Maiolino

9839 MIXED LEAST-SQUARES FINITE ELEMENT FORMULATIONS FOR HYPERELASTICITY
***Alexander Schwarz**, Maximilian Igelbüscher, Jörg Schröder*

6490 L2 BEST-APPROXIMATION OF THE ELASTIC STRESS IN THE ARNOLD-WINTHER FEM
*Carsten Carstensen, **Dietmar Gallistl**, Mira Schedensack*

Wednesday, June 8 **Europa**
8:30-10:30

MS 714 - 1: STRENGTH, FATIGUE AND STABILITY OF COMPOSITE STRUCTURES

MS Organizers: Raimund Rolfes, Martin Ruess, Kai-Uwe Schröder
Chair: Martin Ruess, Raimund Rolfes

11175 MICROMECHANICAL AND MEAN-FIELD MODELING OF LONG FIBER REINFORCED POLYMER STRUCTURES WITH LOCAL CONTINUOUS FIBER REINFORCEMENTS
***Thomas Böhlke**, Robert Bertoti, Bartel Brylka, Fabian Buck, Loredana Kehrer, Viktor Müller, Konstantin Priesnitz, Malte Schemmann*

4807 UTILIZATION OF LAMINATION PARAMETERS FOR FAST PROBABILISTIC ANALYSIS OF THICK COMPOSITE STRUCTURES
Benedikt Kriegesmann

9898 IDENTIFICATION OF ESSENTIAL IMPERFECTION PATTERNS FOR AXIALLY COMPRESSED COMPOSITE CYLINDRICAL SHELLS
***Alexander Meurer**, Christian Gerendt, Raimund Rolfes*

8005 ROBUST INTEGRAL COMPOSITE AIRCRAFT STRUCTURES
Tamas Havar

8001 REFINED 2D FINITE ELEMENTS FOR COMPOSITE PLATES AND SHELLS ACCOUNTING FOR HYGROTHERMAL EFFECTS
*Maria Cinefra, Guohong Li, **Marco Petrolo**, Erasmo Carrera*

Wednesday, June 8 **Leda**
8:30-10:30

MS 1001 - 5: STRUCTURAL AND MULTIDISCIPLINARY OPTIMIZATION

MS Organizers: J.F. Aguilar Madeira, Helder C. Rodrigues
Chair: Jacob Oest

7644 LATIN HYPERCUBE SAMPLING BASED ON ADAPTIVE ORTHOGONAL DECOMPOSITION
Dirk Roos

7645 A BENCHMARK OF CONTEMPORARY METAMODELING ALGORITHMS
***Can Bogoclu**, Dirk Roos*

7643 A NEW OPTIMIZED ANISOTROPIC MOVING LEAST SQUARES SURROGATE MODEL WITH MAXIMIZED PROGNOSIS
***Kevin Cremanns**, Dirk Roos*

7092 ON THE CONSIDERATION OF UNCERTAINTY IN DESIGN: OPTIMIZATION – RELIABILITY – ROBUSTNESS
***Nicolas Lelièvre**, Pierre Beaurepaire, Cécile Mattrand, Nicolas Gayton, Abdelkader Ostmane*

10063 A SUPERSTRUCTURE-BASED OPTIMIZATION APPROACH FOR BUILDING SPATIAL TOPOLOGIES
***Koen van der Blom**, Sjonnie Boonstra, Hèrm Hofmeyer, Michael Emmerich*

Wednesday, June 8 **Athena**
8:30-10:30

MS 504 - 1: NUMERICAL METHODS AND TOOLS FOR KEY EXASCALE COMPUTING CHALLENGES IN ENGINEERING AND APPLIED SCIENCES

MS Organizers: Eugenio Oñate, Manolis Papadrakakis, Peter Wriggers
Chair: Eugenio Oñate

14678 EXTREMELY LARGE WIND SIMULATION OVER BARCELONA CITY
***Pooyan Dadvand**, Abel Coll, Riccardo Rossi, Cecilia Soriano, Eugenio Oñate*

11500 EVALUATION OF SPARSE LINEAR ALGEBRA OPERATIONS IN TRILINOS
***Mohammad Siahatgar**, Gabriele von Voigt*

10177 TOWARDS THE PETABYTE ERA: POST-PROCESSING AND VISUALIZATION FOR COMPUTATIONAL ENGINEERING
***Miguel A. Pasenau**, Javier Mora, Jorge Suit, Abel Coll*

14777 THE SIMULATION POWER OF PARTICLE-BASED METHODS FOR THE PARALLEL COMPUTATION OF A WIDE RANGE OF CHALLENGING ENGINEERING PROBLEMS
***Bircan Avci**, Jan-Philipp Fürstenau, Peter Wriggers*

5356 KINETIC MODELS AND ALGORITHMS FOR SOLUTION OF THE MAGNETOGASDYNAMIC PROBLEMS ON THE MODERN SUPERCOMPUTING SYSTEMS
***Boris Chetverushkin**, Nicola D'Ascenzo, A. Saveliev, Valeri Saveliev*

Wednesday, June 8 **Artemis**
8:30-10:30

MS 113 - 3: MATHEMATICAL AND NUMERICAL MODELING OF THE HEART

MS Organizers: Luca Dede', Luca Pavarino, Alfio Quarteroni
Chair: Marco Paggi

8360 MONODOMAIN/MONODOMAIN 3D/1D COUPLING FOR CARDIAC ELECTRIC PROPAGATION WITH DETAILED PURKINJE NETWORK
***Christian Vergara**, Simone Palamara, Matthias Lange, Alejandro Frangi, Alfio Quarteroni*

7148 COMPUTATIONAL MODELING OF CONTACT INTERACTIONS BETWEEN ACTIVE DEFORMABLE CELLS
*Alessio Gizzi, **Marco Paggi***

6064 THERMO-ELECTRO-MECHANICAL MODELING OF CARDIAC ARRHYTHMIAS
*Christian Cherubini, Flavio Fenton, Simonetta Filippi, **Alessio Gizzi**, Alessandro Loppini*

10657 INFLUENCE OF FIBER ARCHITECTURE AND PERICARDIAL BOUNDARY CONDITIONS ON CARDIAC MECHANICS SIMULATIONS
***Martin R. Pfaller**, Andreas Nagler, Julia M. Hörmann, Martina Weigl, Cristóbal Bertoglio, Wolfgang A. Wall*

7578 PATIENT SPECIFIC STRESS ANALYSIS AND INFARCT ZONE DETECTION IN LBBB PATIENTS
***Sareh Behdadfar**, Laurent Navarro, Joakim Sundnes, Molly Maleckar, Stéphane Avril*

Wednesday, June 8 **Aphrodite**
8:30-10:30

MS 103 - 1: MECHANICS OF BIOLOGICAL TISSUES

MS Organizers: Markus Böl, Gerhard A. Holzapfel
Chair: Gerhard A. Holzapfel

8166 ON THE MECHANICAL TESTING OF OOCYTES
***Markus Böl**, Johannes Dittmann*

6955 INFLUENCE OF MUSCLE COMPRESSION ON DYNAMIC MUSCLE PERFORMANCE
***Tobias Siebert**, Norman Stutzig, Olaf Till, Christian Rode*

8900 SKELETAL MUSCLE MECHANICS: MODELLING THE INTERACTION BETWEEN THE MICROSTRUCTURE AND THE ENVIRONMENTAL MECHANICAL ENVELOPE
***Christobel Gondwe**, Paul N Watton, Xinshan Li*

11720 BIOMECHANICAL PROPERTIES OF CORNEAL EXTRACELLULAR MATRIX USING EXPERIMENTAL AND COMPUTATIONAL METHODS
Hamed Hatami-Marbini

5245 COMPUTATIONAL MODELING OF THE ARTERIAL WALL BASED ON LAYER-SPECIFIC HISTOLOGICAL DATA
*Tao Jin, **Ilinca Stanciulescu***

Wednesday, June 8 **Antigoni**
8:30-10:30

MS 806 - 4: MULTISCALE MODELLING OF MATERIALS AND STRUCTURES

MS Organizers: Tadeusz Burczyński, Xavier Oliver, Maciej Pietrzyk, Alfredo Huespe
Chair: Rolf Mahnken

8992 ON APPLICATION OF THE MESHLESS FINITE DIFFERENCE METHOD TO NUMERICAL HOMOGENIZATION
Irena Jaworska

8750 CONCURRENT MULTISCALE MODELING OF CONCRETE MEMBERS USING FINITE ELEMENTS WITH HIGH ASPECT RATIO AND COUPLING FINITE ELEMENTS
***Osvaldo L. Manzoli**, Eduardo A. Rodrigues, Luís A.G. Bitencourt Jr, Túlio N. Bittencourt*

8594 ASYMPTOTIC HOMOGENIZATION OF HYGRO-THERMO-ELASTIC PROPERTIES OF FIBROUS NETWORKS
***Emanuela Bosco**, Ron H.J. Peerlings, Marc G.D. Geers*

8363 ANALYSIS OF PREDICTIVE CAPABILITIES OF MULTISCALE PHASE TRANSFORMATION MODELS BASED ON THE NUMERICAL SOLUTION OF HEAT TRANSFER AND DIFFUSION EQUATIONS
*Monika Pernach, Krzysztof Bzowski, Lukasz Rauch, **Maciej Pietrzyk***

6874 HYBRID FE/XFE FINITE ELEMENT MODEL FOR SIMULATION OF BRITTLE-DUCTILE FRACTURES IN DUAL-PHASE STEEL GRADES.
***Konrad Perzynski**, Lukasz Madej*

9063 ISOGEOMETRIC DEFORMATION OF TWO DIMENSIONAL STATISTICALLY SIMILAR REPRESENTATIVE VOLUME ELEMENT BY USING T-SPLINES
***Daniel Bachniak**, Lukasz Rauch, Maciej Pietrzyk*

Wednesday, June 8 **Apollo East**
8:30-10:30

MS 801 - 3: MULTISCALE COMPUTATIONAL HOMOGENIZATION FOR BRIDGING SCALES IN THE MECHANICS AND PHYSICS OF COMPLEX MATERIALS

MS Organizers: Julien Yvonnet, Kenjiro Terada, Peter Wriggers, Marc Geers
Chair: Kenjiro Terada

6901 HOMOGENIZATION-BASED DESIGN AND OPTIMIZATION OF LUBRICATION INTERFACE TEXTURES
***Abdullah Waseem**, Ilker Temizer, Junji Kato, Kenjiro Terada*

9978 A NUMERICAL INCREMENTAL HOMOGENIZATION APPROACH TO CALCULATE ELASTOPLASTIC HETEROGENEOUS STRUCTURES
*Trung Hieu Hoang, **Mohamed Guerich**, Julien Yvonnet*

7449 PREDICTION OF INTRA- AND INTER-LAMINAR FAILURE OF LAMINATES USING NON-LOCAL DAMAGE-ENHANCED MEAN-FIELD HOMOGENIZATION SIMULATIONS
***Ling Wu**, Federico Sket, Laurent Adam, Issam Doghri, Ludovic Noels*

8897 MULTIPHYSICS ANALYSIS OF HYGROTHERMAL AGEING OF GLASS/EPOXY COMPOSITES IN AN FE2 FRAMEWORK
***I. B. C. M. Rocha**, R. P. L. Nijssen, F. P. van der Meer, L. J. Sluys*

10089 COMPUTATIONAL HOMOGENIZATION OF HETEROGENEOUS MATERIALS AT LARGE DEFORMATIONS
***Saba Saeb**, Paul Steinmann, Ali Javili*

Wednesday, June 8 **Apollo West**
8:30-10:30

MS 1308: MODELLING AND INVERSE METHODS IN NONLINEAR DYNAMICAL SYSTEMS

MS Organizers: Sotirios Natsiavas, Costas Papadimitriou, Eleni Chatzi, Dimitrios Giagopoulos
Chair: Dimitrios Giagopoulos

9925 MULTISCALE MODELLING OF DYNAMICAL SYSTEMS WITH FRICTION BETWEEN RANDOMLY ROUGH SURFACES
Carsten Proppe

8413 DYNAMICS OF MULTIBODY SYSTEMS SUBJECT TO UNILATERAL MOTION CONSTRAINTS USING A NEW NUMERICAL ALGORITHM FOR CONTACT DETECTION
***Antonios Pournaras**, Fotios Karaoulanis, Sotirios Natsiavas*

4806 ON THE EXISTENCE OF NONLINEAR NORMAL MODES
George Haller

8597 PARAMETER ESTIMATION OF NONLINEAR LARGE SCALE SYSTEMS THROUGH STOCHASTIC METHODS AND MEASUREMENT OF ITS DYNAMIC RESPONSE
***Dimitrios Giagopoulos**, Alexandros Arailopoulos*

8418 EQUATIONS OF MOTION FOR MECHANICAL SYSTEMS SUBJECT TO ACATASTATIC CONSTRAINTS
*Sotirios Natsiavas, **Elias Paraskevopoulos***

8361 FINITE ELEMENT METAMODELING OF UNCERTAIN STRUCTURES
***Vasilis Dertimanis**, Dimitris Giagopoulos, Eleni Chatzi*

Wednesday, June 8 **Room 1**
8:30-10:30

MS 409 - 1: CURRENT TRENDS IN MODELLING AND SIMULATION OF TURBULENT FLOWS

MS Organizers: Suad Jakirlić, ERCOFTAC SIG15
Chair: Suad Jakirlić

9720 **KEYNOTE:** ON THE UNIVERSALITY OF NEAR-WALL TURBULENCE IN THE PRESENCE OF ENERGETIC OUTER STRUCTURES
***Michael Leschziner**, Lionel Agostini*

7179 WALL MODEL FOR DISCONTINUOUS GALERKIN IMPLICIT LARGE-EDDY SIMULATIONS
***Ariane Frère**, Koen Hillewaert, Philippe Chatelain, Grégoire Winckelmans*

8430 A NEW METHOD OF A PRIORI TEST USING ANALYTICAL SOLUTION OF FLOWS AROUND ELLIPTICAL BURGERS VORTEX
Hiromichi Kobayashi

7465 LARGE-EDDY SIMULATION AND FAR FIELD ACOUSTICS OF A SUBSONIC HOT JET
Odile Labbé

8354 NUMERICAL ANALYSIS OF A STRAIGHT VORTEX TUBE IN A LAMINAR BOUNDARY-LAYER FLOW
Kazuo Matsuura

Wednesday, June 8 **Room 2**
8:30-10:30

STS 3 - 1: INNOVATIVE DESIGN OPTIMIZATION TOOLS LINKED TO INDUSTRIAL AERONAUTICAL APPLICATIONS: TARGETING GREENER PERFORMANCES

STS Organizers: Jacques Periaux, Gabriel Bugeda
Chair: Pedro Díez

14227 EFFICIENT METHODOLOGIES FOR ROBUST DESIGN OPTIMIZATION WITH LARGE NUMBER OF UNCERTAINTIES
Alberto Clarich

14228 ACCURACY ASSESSMENT OF GENERALIZED PARAMETRIC SOLUTIONS FOR OPTIMIZATION AND UNCER-TAINTY QUANTIFICATION
***Pedro Díez**, Sergio Zlotnik, Raquel García-Blanco*

14239 ADJOINT METHODS FOR EFFICIENT OPTIMIZATION AND CONTROL IN CFD AND CAA
Nicolas Gauger

15521 COMBINING AN RBF-BASED MORPHER WITH CONTINUOUS ADJOINT FOR LOW-SPEED AERONAUTICAL OPTIMIZATION APPLICATIONS
***Evangelos Papoutsis-Kiachagias**, Matej Andrejasic, Stefano Porziani, Corrado Groth, David Erzen, Marco Evangelos Biancolini, Emiliano Costa, Kyriakos Giannakoglou*

14247 A COOPERATIVE APPROACH TO MULTI-LEVEL MULTI-DISCIPLINARY AIRCRAFT OPTIMIZATION
***Caslav Ilic**, Mohammad bu-Zurayk*

Wednesday, June 8 **Room 3**
8:30-10:30

MS 1207: COMPUTATIONAL SIMULATION OF SMART STRUCTURES AND MATERIALS

MS Organizers: Ruediger Schmidt, Kai-Uwe Schröder
Chair: Kai-Uwe Schröder

10061 TRANSVERSE WAVE PROPAGATION IN A ONE-DIMENSIONAL STRUCTURE COUPLED TO ITS ELECTRICAL ANALOGUE: COMPARISON OF TRANSFER MATRIX MODELS
Boris Lossouarn, Mathieu Aucejo, ***Jean-François Deü***

12010 A NEW COMPUTATIONAL FRAMEWORK FOR LARGE STRAIN ELECTROMECHANICS
Antonio J. Gil*, Rogelio Ortigosa*

10374 MODELING OF A LARGE SPACE STRUCTURE FOR THERMAL DEFORMATION COMPENSATION ANALYSIS
Kaori Shoji*, Motofumi Usui, Daigoro Isobe*

10109 REDUNDANCY DISTRIBUTION AND ADAPTIVE STRUCTURES
Malte von Scheven*, Ekkehard Ramm, Manfred Bischoff*

8188 A MULTIPHYSICS FINITE ELEMENT MODEL FOR FUNCTIONALLY GRADED MAGNETO-ELECTRO-ELASTIC STRUCTURES
Narasimha Rao Mekala*, Rüdiger Schmidt, Kai-Uwe Schröder*

Wednesday, June 8 **Room 4**
8:30-10:30

CS 110 - 6: NUMERICAL MODELS IN BIOMECHANICS

Chair: Suvranu De

9990 MODELING OF THERMOMECHANICAL DAMAGE OF ULTRASONICALLY ACTIVATED SOFT TISSUE
Rahul, ***Suvranu De***

8248 SHEAR WAVES IN DEFORMED ELASTIC MATERIALS
Adela Capilnasiu*, Daniel Fovargue, Ondrej Holub, Ralph Sinkus, David Nordsletten*

10742 EFFECT OF PERIVASCULAR TISSUE ON INFLATION-EXTENSION BEHAVIOR OF ABDOMINAL AORTA
Tereza Voňavková*, Lukáš Horný, Jan Veselý, Tomáš Adámek, Rudolf Žitný*

10966 EFFECT OF STERILIZATION ON MECHANICAL PROPERTIES OF BIOLOGICAL COMPOSITE
Jan Vesely*, Hynek Chlup, Rudolf Zitny, Tomas Grus*

Wednesday, June 8 **Room 5**
8:30-10:30

CS 410 - 4: COMPUTATIONAL FLUID MECHANICS

Chair: Sergey Utyuzhnikov

9832 DOMAIN DECOMPOSITION APPROACH FOR NEAR-WALL TURBULENCE MODELING
Sergey Utyuzhnikov

6041 THE INLET AND OUTLET BOUNDARY PROBLEM WITH THE PREFERENCE OF MASS FLOW
Martin Kyncl*, Jaroslav Pelant*

6625 POSTPROCESSING OF NON-LOCALLY CONSERVATIVE FLUX
Lars Hov Odsæter*, Trond Kvamsdal, Mary Fanett Wheeler, Mats G. Larson*

6795 A STAGGERED PRESSURE CORRECTION SCHEME TO COMPUTE A COMPRESSIBLE FLOW WITH A TRAVELLING REACTIVE INTERFACE
Laura Gastaldo, ***Dionysios Grapsas****, Raphaèle Herbin, Jean-Claude Latché*

4619 AN ADAPTIVE FIXED-MESH ALE METHOD FOR FREE SURFACE FLOWS
Joan Baiges*, Ramon Codina, Ernesto Castillo, Arnau Pont*

Wednesday, June 8 **Room 7**
8:30-10:30

MS 114: COMPUTER MODELING OF BALANCE AND HEARING DISORDERS

MS Organizers: Nenad Filipovic, Thanos Bibas
Chair: Tijana Djukic

10709 **KEYNOTE:** REAL TIME OTOCONIA PARTICLE TRACKING IN THE SIMPLIFIED SEMI-CIRCULAR CANAL
Tijana Djukic*, Nenad Filipovic*

10756 MODELING OF FLUID-STRUCTURE INTERACTION OF THREE SEMI-CIRCULAR CANALS
Zarko Milosevic*, Igor Saveljic, Dalibor Nikolic, Milos Radovic, Velibor Isailovic, Nenad Filipovic*

9007 ELECTRO-MECHANICAL COCHLEA MODEL
Milica Nikolic*, Velibor Isailovic, Nenad Filipovic*

12102 AN EEG STUDY OF THE EFFECTS OF MUSIC STIMULATION ON EMOTIONAL VALENCE RESPONSE
Bojana Andjelkovic Cirkovic*, Mirko Rosic, Aleksandar Peulic, Maja Colic, Nenad Filipovic*

8959 THE REALISTIC THREE-DIMENSIONAL MODEL OF THE MIDDLE AND INNER EAR
Velibor Isailovic*, Athanasios Bibas, Antonis Sakellarios, Nikolaos Tachos, Milica Nikolic, Dalibor Nikolic, Igor Saveljic, Nenad Filipovic*

Wednesday, June 8 **Room 8**
8:30-10:30

MS 613: COMPUTATIONAL STRATEGIES FOR THE SIMULATION OF TURBULENT TRANSPORT AND MIXING IN THE NATURAL ENVIRONMENT

MS Organizers: Fotis Sotiropoulos, Peter J. Diamessis
Chair: Fotis Sotiropoulos

8967 **KEYNOTE:** TRANSPORT AND MIXING DUE TO BREAKING INTERNAL GRAVITY WAVES ON SLOPES
Oliver Fringer*, Robert Arthur*

10558 A SPECTRAL MULTIDOMAIN PENALTY METHOD MODEL FOR THE SIMULATION OF INTERNAL SOLITARY WAVE SHOALING AND BREAKING OVER GENTLE SLOPES
Sumedh Joshi, Greg Thomsen, ***Peter Diamessis****, Gustavo Rivera-Rosario*

4738 FULLY COUPLED HYDRO-MORPHODYNAMICS MODELING OF THE MISSISSIPPI RIVER
Ali Khosronejad, ***Fotis Sotiropoulos***

4733 SIMULATING THE BOUNDARY LAYER BELOW INTERNAL SOLITARY WAVES: NUMERICAL CHALLENGES AND PHYSICAL PROCESSES
Marek Stastna*, Sandhya Harnanan, Nancy Soontiens*

5451 MULTISCALE GEOPHYSICAL SIMULATIONS: NESTING A LARGE EDDY SIMULATION WITHIN A REGIONAL OCEAN MODEL (SOMAR) WITH ADAPTIVE MESH REFINEMENT
***Alberto Scotti**, Vamsi Chalamalla, Edward Santilli, Sutanu Sarkar*

Wednesday, June 8 **Room 9**
8:30-10:30

MS 1217 - 2: COMPUTATIONAL METHODS IN EARTHQUAKE ENGINEERING AND STRUCTURAL DYNAMICS

MS Organizers: Vagelis Plevris, Georgia Kremmyda, Yasin Fahjan
Chair: Vagelis Plevris

7958 BEAM DYNAMIC STRESSES INCREMENTS AFTER PARTIAL DECONSTRUCTION OF FOUNDATION
***Vladimir Gordon**, Olga Pilipenko, Timur Gasimov*

10373 MODELLING OF HINGES IN SEGMENTED TUNNELS
***Gelacio Juárez-Luna**, Enrique Tenorio-Montero*

5973 EFFECT OF SOIL SPATIAL VARIABILITY ON THE DYNAMIC BEHAVIOR OF A SLOPE
*Michael Michael, **Tamara Al-Bittar**, Abdul-Hamid Soubra*

7922 BULK SOLITARY WAVES AS THE BOX TOOL FOR NON-DESTRUCTIVE EVALUATION
*Alexander Samsonov, **Irina Semenova**, Olga Moskalyuk, Vladimir Yudin*

7129 THE INFLUENCE OF UNCERTAINTY OF DESIGN PARAMETERS ON DYNAMIC CHARACTERISTICS OF STRUCTURE WITH DAMPERS
***Magdalena Lasecka-Plura**, Roman Lewandowski*

7987 RELIABILITY OF SYSTEMS EQUIPPED WITH VISCOUS DAMPERS WITH VARIABLE PROPERTIES
*Andrea Dall'Asta, Laura Ragni, **Fabrizio Scozzese**, Enrico Tubaldi*

Wednesday, June 8 **Room 10**
8:30-10:30

MS 1220: DYNAMICS OF STRUCTURES SUBJECT TO SEISMIC EXCITATIONS

MS Organizers: Michel Géradin, Evtim Zahariev, Evangelos J. Sapountzakis
Chair: Evtim Zahariev, Evangelos J. Sapountzakis

10352 A FINITE ELEMENT APPROACH TO ANALYZE MOTION BEHAVIORS OF INDOOR NON-STRUCTURAL COMPONENTS OF BUILDINGS
***Daigoro Isobe**, Masato Katagiri, Takashi Fujiwara, Toshiki Miura*

8477 NONLINEAR DYNAMIC BEHAVIOUR OF BASE-ISOLATED BUILDINGS WITH THE FRICTION PENDULUM SYSTEM SUBJECTED TO NEAR-FAULT EARTHQUAKES
***Fabio Mazza**, Sandro Sisinno*

9085 ABSOLUTE FINITE ELEMENT COORDINATES IN THE DYNAMICS OF LARGE FLEXIBLE STRUCTURES
Evtim Zahariev

11322 EQUIVALENT UNIAXIAL ACCELEROGRAM FOR CSS-BASED ISOLATION SYSTEMS ASSESSMENT UNDER TWO-COMPONENTS SEISMIC EVENTS
***Marco Furinghetti**, Alberto Pavese*

10717 MODAL ANALYSIS OF A FRAME MODEL UNDER UNMEASURED SEISMIC INPUT
*Claudio Valente, Vincenzo Sepe, Marco Di Pilla, **Fabrizio Iezzi**, Rossella Siano, Luigia Zuccarino*

Wednesday, June 8 **Room 11**
8:30-10:30

MS 410 - 1: COMPLEX FLUID FLOWS IN ENGINEERING: MODELLING, SIMULATION AND OPTIMIZATION

MS Organizers: Stefanie Elgeti, Philipp Knechtges
Chair: Philipp Knechtges

8142 TOPOLOGY OPTIMIZATION FOR UNSTEADY THERMAL FLOW PROBLEMS USING THE LATTICE BOLTZMANN METHOD
***Sebastian Nørgaard**, Ole Sigmund, Boyan Lazarov*

9318 A FINITE ELEMENT FLUID-STRUCTURE INTERACTION MODEL FOR PARTICLE SUSPENSIONS IN VISCOELASTIC FLOW
*Yongxing Wang, **Mark Walkley**, Peter Jimack*

8680 ADVANCES IN GEOMETRICAL PARAMETRIZATION AND REDUCED ORDER MODELS AND METHODS FOR COMPUTATIONAL FLUID DYNAMICS PROBLEMS IN APPLIED SCIENCES AND ENGINEERING: OVERVIEW AND PERSPECTIVES
*F.Salmoiraghi, F.Ballarin, G.Corsi, A.Mola, M.Tezzele, **G.Rozza***

4666 SIMULATION OF FLUID PENETRATION IN INKJET PRINTING PROCESSES
***Simon Praetorius**, Axel Voigt*

6808 SENSITIVITY STUDY OF THE NUMERICAL SETUP FOR AN AUTOMATIC OPTIMIZATION PROCEDURE FOR A HYDRAULIC MACHINE
***Alexander Tismer**, Markus Schlipf, Stefan Riedelbauch*

7786 NUMERICAL PREDICTION OF PRESSURE DROP AND LAMINAR INSTABILITIES IN FULLY-DEVELOPED FLOW IN A CLOSED COMPOUND CHANNEL
***Jalusa Ferrari,** Jhon Goulart,Sandi Souza*

Wednesday, June 8 **Room 12**
8:30-10:30

MS 601: SHOCK WAVE-BOUNDARY LAYER INTERACTION AND ITS CONTROL

MS Organizers: Piotr Doerffer, George Barakos
Chair: Piotr Doerffer, George Barakos

11964 SHOCK WAVE BOUNDARY LAYER INTERACTION IN PROFILE CASCADES REPRESENTING ROTOR BLADINGS OF THE LAST STAGE OF LARGE OUTPUT STEAM TURBINES
*Martin Luxa, **David Simurda**, Jaromir Prihoda, Jana Vachova*

10540 NUMERICAL SIMULATION OF TRANSONIC BUFFET AND ITS CONTROL USING TANGENTIAL JET BLOWING
*Ksenia Abramova, Kamil Khairullin, **Alexander Ryzhov**, Vitaly Soudakov*

11845 ACTIVE FLOW CONTROL BY JET INJECTION ON SHOCK-BOUNDARY LAYER INTERACTION PHENOMENA
***Takahiro Ukai**, Hossein Zare-Behtash, Kinhing Lo, Konstantinos Kontis*

11922 EXPERIMENTAL STUDY OF A TRANSITIONAL OBLIQUE SHOCK-WAVE / BOUNDARY LAYER INTERACTION
***Reynald Bur**, Pascal Molton*

12038 ANALYSIS OF EFFECTS OF SHAPE AND LOCAT ION OF MICRO - TURBULATORS ON UNSTE ADY SHOCKWAVE - BOUNDARY LAYER INTERACTION IN TRANS ONIC FLOW
***Janusz Sznajder**, Tomasz Kwiatkowski*

11983 SHOCK WAVE BOUNDARY LAYER INTERACTION INVESTIGATION: CONTROL BY ROD VORTEX GENERATORS AND THEIR APPLICATION ON HELICOPTER ROTOR BLADES
***Fernando Tejero Embuena**, Piotr Doerffer, Pawel Flaszynski*

Wednesday, June 8 **Room 15**
8:30-10:30

MS 307: ADVANCES IN FINITE ELEMENT METHODS FOR TETRAHEDRAL MESH COMPUTATIONS

MS Organizers: Guglielmo Scovazzi, Antonio J. Gil, Micheal W. Gee
Chair: Guglielmo Scovazzi

11316 A SIMPLE LINEAR TETRAHEDRAL FINITE ELEMENT FOR INCOMPRESSIBLE SOLID DYNAMICS: A VARIATIONAL MULTISCALE APPROACH
***Guglielmo Scovazzi**, Xianyi Zeng, Simone Rossi*

11309 A FIRST ORDER HYPERBOLIC FRAMEWORK FOR LARGE STRAIN COMPUTATIONAL SOLID DYNAMICS: AN UPWIND FINITE VOLUME METHOD
***Chun Hean Lee**, Antonio J. Gil, Jibran Haider, Osama Ibrahim, Javier Bonet*

11730 IMPLICIT FINITE INCOMPRESSIBLE ELASTODYNAMICS WITH LINEAR FINITE ELEMENTS
***Simone Rossi**, Nabil Abboud, Guglielmo Scovazzi*

10995 ADAPTIVE MESHING METHOD FOR TURBULENT FLOW SIMULATIONS
***Laure Billon**, Youssef Mesri, Elie Hachem*

8297 DESIGNING TETRAHEDRAL FINITE ELEMENTS WITH SMOOTH POLYNOMIAL INTERPOLATION
***Stefanos-Aldo Papanicolopulos**, Antonis Zervos*

Wednesday, June 8 **Room 17**
8:30-10:30

CS 1300 - 2: UNCERTAINTY QUANTIFICATION AND ERROR ESTIMATION

Chair: Paul Hauseux

11370 EFFICIENT PROPAGATION OF UNCERTAINTY THROUGH AN INVERSE NON-LINEAR DEFORMATION MODEL OF SOFT TISSUE
***Paul Hauseux**, Jack S. Hale, Stéphane P. A. Bordas*

5569 INTRACOCHLEAR POTENTIAL PREDICTION ACCOUNTING FOR BONE CONDUCTIVITY UNCERTAINTY
***Nerea Mangado**, Jordi Pons-Prats, Mario Ceresa, Gabriel Bugeda, Miguel Á. González Ballester*

7799 FAILURE PROBABILITY OF A SYSTEM WITH COMMON CAUSE FAILURES BY MULTIVARIATE EXPONENTIAL DISTRIBUTION
***Megumi Maruyama**, Tetsushi Yuge, Shigeru Yanagi*

7622 THE UPLIFT CAPACITY OF HORIZONTAL PLATE ANCHORS IN SPATIALLY VARIABLE CLAY USING SPARSE POLYNOMIAL CHAOS EXPANSIONS
***Tom Charlton**, Mohamed Rouainia*

8559 FATIGUE RELIABILITY OF AGEING RAILWAY BRIDGES: FEASIBILITY OF PROBABILISTIC APPROACH
Nirosha D. Adasooriya

Wednesday, June 8 **Room 18**
8:30-10:30

MS 1007 - 2: ADDITIVE MANUFACTURING AND OPTIMIZATION

MS Organizers: Ekkehard Ramm, Ole Sigmund, Pierre Duysinx, Wing Kam Liu
Chair: Ekkehard Ramm, Claus B.W. Pedersen

9250 OPTIMUM LAYOUT OF COMPONENTS INCLUDING CELLULAR MATERIALS USING A GENERALIZED DISCRETE MATERIAL OPTIMIZATION APPROACH
***Pierre Duysinx**, Maxime Collet, Eduardo Fernandez, Simon Bauduin, Michael Bruyneel*

10306 MULTI-SCALE TOPOLOGY OPTIMIZATION CONSIDERING MECHANICAL AND THERMAL STRESS FORCES FOR ADDITIVE MANUFACTURING
***Junji Kato**, Shunsuke Nishizawa, Takashi Kyoya, Kenjiro Terada*

6404 STUDY OF TOPOLOGY OPTIMIZATION PARAMETERS AND SCAFFOLD STRUCTURES IN ADDITIVE MANUFACTURING
*Alain Garaigordobil, **Ruben Ansola**, Estrella Veguería*

14751 OBTAINING ULTRA-LIGHT AND HIGH-PERFORMANCE STRUCTURES USING TOPOLOGY OPTIMIZATION AND ADDITIVE MANUFACTURING
***Ji-Hong Zhu**, Wei-Hong Zhang*

7389 IMPROVING THE WORKFLOW FROM DESIGN TO PRODUCTION OF TOPOLOGICAL OPTIMIZED PARTS BY USING ADDITIVE MANUFACTURING
***Simon Vermeir**, Miguel Godino*

Wednesday, June 8 **Room 20**
8:30-10:30

MS 907 - 1: REGULARIZED ENRICHED APPROXIMATIONS AND QUADRATURE FOR DISCONTINUITIES, SINGULARITIES AND CONTINUOUS-DISCONTINUOUS TRANSITION

MS Organizers: Elena Benvenuti, Giulio Ventura, José M.A. César de Sá
Chair: Giulio Ventura

9492 **KEYNOTE:** APPLICATION OF THE DIFFERENCE POTENTIAL METHOD TO LINEAR ELASTIC FRACTURE MECHANICS PROBLEMS
*Huw Woodward, Sergei Utyuzhnikov, **Patrick Massin***

9460 CONTINUOUS MODEL FOR DUCTILE FRACTURE USING A PHASE-FIELD MODEL
*Erfan Azinpour, Abel D. Santos, **Jose Cesar de Sa***

7934 STABILIZING THE XFEM: EXTENSION TO FINITE DEFORMATIONS, INELASTIC MATERIAL BEHAVIOUR, MATERIAL INSTABILITIES AND MULTIFIELD PROBLEMS
Stefan Loehnert

7672 G-THETA METHOD AND FAST MARCHING METHOD FOR THREE-DIMENSIONAL CRACK PROPAGATION
***Matthieu Le Cren**, Patrick Massin, Alexandre Martin, Nicolas Moës*

7771 ON NEW INTEGRATION METHODS FOR X-FEM IN SOLID MECHANICS PLASTICITY.
***Alexandre Martin**, Nunziante Valoroso, Patrick Massin*

Wednesday, June 8 **Room 21**
8:30-10:30

MS 404 - 3: SIMULATION OF ENVIRONMENTAL FLOWS
MS Organizers: Pablo Ortiz, Piotr K. Smolarkiewicz, Joanna Szmelter
Chair: Piotr K. Smolarkiewicz

7463 HIGH ORDER ADAPTIVE METHODS FOR ENVIRONMENTAL FLUID DYNAMICS
***Luca Bonaventura**, Giovanni Tumolo*

11635 STABILIZING/OPTIMIZING FLUVIAL-SHALLOW WATER SYSTEMS WITH DISCONTINUOUS GALERKIN METHODS
***Craig Michoski**, Clint Dawson, Maximilian Bremer, Ali Samii*

4876 NUMERICAL INVESTIGATION OF 2-D BUOYANCY DRIVE FLOWS: LOCK EXCHANGE VS. OVERFLOWS
***Kiran Bhaganagar**, Manjure Nayamatullah*

5981 PROJECTION-BASED MODEL REDUCTION FOR FINITE ELEMENT APPROXIMATION OF SHALLOW WATER FLOWS
***Matthew Farthing**, Alexander Lozovskiy, Christopher Kees*

6611 NUMERICAL MODELLING OF INCIPIENT SEDIMENT TRANSPORT OF ELLIPSOIDAL PARTICLES
***Rafael Bravo**, Pablo Ortiz*

Wednesday, June 8 **Room 22**
8:30-10:50

Olympiad - 1
Chair: Emmanuel Tromme

16490 ON THE EQUIVALENT STATIC LOAD METHOD FOR THE STRUCTURAL OPTIMIZATION OF MECHANICAL SYSTEMS ACCOUNTING FOR MULTICOMPONENT-BASED CONSTRAINTS
***Emmanuel Tromme**, Valentin Sonneville, James K. Guest, Olivier Brüls, Pierre Duysinx*

16373 HIGH-ORDER ARBITRARY LAGRANGIAN EULERIAN ONE-STEP WENO FINITE VOLUME SCHEMES ON TETRAHEDRAL MESHES FOR CONSERVATIVE AND NONCONSERVATIVE HYPERBOLIC BALANCE LAWS
***Walter Boscheri**, Michael Dumbser*

5812 INTEGRATION OF DESIGN AND ANALYSIS THROUGH BOUNDARY INTEGRAL EQUATIONS
***Benjamin Marussig**, Jürgen Zechner, Gernot Beer, Thomas-Peter Fries*

16384 MODEL ORDER REDUCTION METHODS FOR PARAMETER-DEPENDENT EQUATIONS – APPLICATIONS IN UNCERTAINTY QUANTIFICATION
Olivier Zahm

16492 INERTIAL REGIMES OF SUSPENSION OF FINITE-SIZE RIGID PARTICLES
Iman Lashgari

16474 LIMIT STATE NUMERICAL PROCEDURES FOR CYCLICALLY LOADED ELASTOPLASTIC STRUCTURES
Konstantinos Panagiotou

16455 FULLY RELIABLE A POSTERIORI ERROR CONTROL FOR EVOLUTIONARY PROBLEMS
***Svetlana Matculevich,** Sergey Repin, Pekka Neittaanmäki*

Wednesday, June 8 **Room 23**
8:30-10:30

MS 1009 - 2: ADJOINT METHODS FOR STEADY & UNSTEADY OPTIMIZATION
MS Organizers: Kyriakos C. Giannakoglou, Jens Dominik Mueller
Chair: Kyriakos C. Giannakoglou

8006 SENSITIVITY ANALYSIS FOR FORCED RESPONSE IN TURBOMACHINERY USING AN ADJOINT HARMONIC BALANCE METHOD
***Anna Engels-Putzka**, Christian Frey*

7761 ADJOINT SHAPE OPTIMISATION FOR SOLIDS REMOVAL FROM MULTIPHASE FLOW
***Shenan Grossberg**, Daniel Jarman, Mark Savill, Hrvoje Jasak, Gavin Tabor*

9092 UNSTEADY ADJOINT TO THE CUT-CELL METHOD USING MESH ADAPTATION ON GPU'S
***Konstantinos Samouchos**, Stergios Katsanoulis, Kyriakos Giannakoglou*

6428 A CODE-COUPLING APPROACH TO THE IMPLEMENTATION OF DISCRETE ADJOINT SOLVERS BASED ON AUTOMATIC DIFFERENTIATION
***Jan Backhaus**, Anna Engels-Putzka, Christian Frey*

5687 ON THE CORRECT APPLICATION OF AD CHECKPOINTING TO ADJOINT MPI-PARALLEL PROGRAMS
***Ala Taftaf**, Laurent Hascoët*

10:30-11:00
Coffee Break

TECHNICAL SESSIONS

Wednesday, June 8 **Zeus East**
11:00-13:00

MS 106 - 3: DIRECT AND INVERSE METHODS FOR CARDIOVASCULAR AND PULMONARY BIOMECHANICS

MS Organizers: Wolfgang A. Wall, C. Alberto Figueroa, Marek Behr
Chair: Kenneth Jansen

7150 **KEYNOTE:** INVERSE CHARACTERIZATION OF REGIONAL, NONLINEAR AND ANISOTROPIC PROPERTIES OF ARTERIES
***Stephane Avril**, Chiara Bellini, Matthew R. Bersi, Paolo Di Achille, Katia Genovese, Jay D. Humphrey*

11236 **KEYNOTE:** COMPREHENSIVE AND PATIENT-SPECIFIC COMPUTATIONAL LUNG MODELING AND A NOVEL VALIDATION APPROACH
***Wolfgang A. Wall**, Christian J. Roth, Anna Birzle, Lena Yoshihara*

9622 STABILITY OF NUMERICAL SCHEMES FOR THE MULTI-DIMENSIONAL MODELLING OF 3D/0D AIRFLOWS AND BLOOD FLOWS
*Celine Grandmont, **Sebastien Martin***

11257 AGILE BOUNDARY CONDITION MODEL DESIGN IN SIMULATED HAEMODYNAMICS
***Christopher J Arthurs**, Miguel S Vieira, Rostislav Khlebnikov, C Alberto Figueroa*

10840 IMAGE-BASED MULTISCALE, MULTIDOMAIN COMPUTATIONAL MODELLING OF PULMONARY BIOMECHANICS
***Miguel Silva Vieira**, Christopher J. Arthurs, Desmond Dillon-Murphy, Rostislav Khlebnikov, C. Alberto Figueroa*

Wednesday, June 8 **Zeus West**
11:00-13:00

MS 112 - 4: ANEURYSMS: SOLID MECHANICS, FLUID MECHANICS, AND MECHANOBIOLOGY

MS Organizers: Christian J. Cyron, Sven Hirsch, Philippe Bijlenga, Roland C. Aydin, Anne M. Robertson, Gerhard A. Holzapfel
Chair: Anne M. Robertson, Sven Hirsch

7099 INVESTIGATION OF FSI AND 1D-FLOW NETWORK BOUNDARY CONDITION IMPACT ON ANEURYSM MODELLING
*Frederico Teixeira, Philipp Wissmann, Esra Neufeld, **Sven Hirsch**, Niels Kuster*

8803 THE POTENTIAL ROLE OF LIPID ACCUMULATION IN INTRACRANIAL ARTERY ANEURYSM WALL DEGENERATION AND ITS RELATION TO THE HEMODYNAMICS
***Riikka Tulamo**, Eliisa Ollikainen, Juan Cebral, Mika Niemelä, Anne Robertson, Juhana Frösen*

8935 STAGNANT BLOOD FLOW IN CEREBRAL ANEURYSMS
***Shin-ichiro Sugiyama**, Makoto Ohta, Teiji Tominaga*

7568 COMPUTATIONAL FLUID DYNAMICS TO EVALUATE SACULAR AORTIC DISEASE
***Rodrigo Romarowski**, Simone Morganti, Alessandro Veneziani, Ferdinando Auricchio*

9305 ANEURYSM MORPHOLOGY AND FLOW VELOCITY CURVES
***Hernán G. Morales**, Odile Bonnefous, Olivier Brina, Vitor Mendes Pereira, Laurent Spelle, Jacques Moret*

9338 EFFECTIVE REMODELING IN THE WALLS OF CEREBRAL ANEURYSMS
***Anne Robertson**, Xinjie Duane, Khaled Aziz, Juan Cebral*

Wednesday, June 8 **Zeus North**
11:00-13:00

MS 901 - 4: ISOGEOMETRIC METHODS

MS Organizers: Yuri Bazilevs, David J. Benson, Rene De Borst, Thomas J.R. Hughes, Trond Kvamsdal, Alessandro Reali, Giancarlo Sangalli, Clemens V. Verhoosel
Chair: Trond Kvamsdal

7097 ISOGEOMETRIC-BASED TOOLS TO SUPPORT CARDIOVASCULAR BIOMECHANICS RESEARCH
***Mauro Ferraro**, Ferdinando Auricchio, Michele Conti, Laura De Lorenzis, Simone Morganti, Alessandro Reali, Robert L. Taylor*

12126 DOMAIN DECOMPOSITION SOLUTION SCHEMES FOR LARGE-SCALE IGA PROBLEMS
***George Stavroulakis**, Dimitris Tsapetis, Manolis Papadrakakis*

11132 A NEW ROTATION-FREE ISOGEOMETRIC FINITE SHELL ELEMENT WITH DIFFERENT ROTATION CONDITIONS FOR BOUNDARIES AND PATCH INTERFACES
*Thang X. Duong, **Farshad Roohbakhshan**, Roger A. Sauer*

5343 AN INTERPOLATION-BASED FAST MULTIPOLE METHOD FOR HIGHER ORDER BOUNDARY ELEMENTS ON PARAMETRIC SURFACES
*Jürgen Dölz, **Helmut Harbrecht**, Michael Peters*

5814 LOCAL ENRICHMENT OF NURBS PATCHES USING A NON-INTRUSIVE COUPLING STRATEGY.
***Robin Bouclier**, Jean-Charles Passieux, Michel Salaun*

11125 ISOGEOMETRIC HYDRODYNAMICS
Ido Akkerman

Wednesday, June 8 **Minos East**
11:00-13:00

MS 1101 - 7: REDUCED BASIS, POD AND PGD MODEL ORDER REDUCTION TECHNIQUES

MS Organizers: Francisco Chinesta, Elias Cueto, Antonio Huerta, Pierre Ladeveze, Gianluigi Rozza
Chair: Elias Cueto

10498 THE EFFECT OF SYSTEM LEVEL MODEL ORDER REDUCTION IN (CONTACTING) FLEXIBLE MULTIBODY SIMULATION ON THE SIMULATION TIMESTEP
***Frank Naets**, Martijn Vermaut, Wim Desmet*

10699 TOWARDS A NON-INTRUSIVE PROPER GENERALIZED DECOMPOSITION SCHEME FOR MODEL ORDER REDUCTION
***Xi Zou**, Pedro Díez, Michele Conti, Ferdinando Auricchio*

12062 A MODEL ORDER REDUCTION TECHNIQUE APPLIED TO MULTI-SCALE THERMO-MECHANIC PROBLEMS
***Andrea Barbarulo**, Ahmed Sridi, Romain Ruyssen, Hachmi Ben-dhia*

15963 ON A REDUCED BASIS SMAGORINSKY TURBULENCE MODEL
Enrique Delgado Avila

7376 NONLINEAR MODEL ORDER REDUCTION WITH ADAPTIVE BASIS
***Johannes Rutzmoser**, Daniel Rixen*

Wednesday, June 8 **Minos North**
11:00-13:00

MS 403 - 1: PARTICLE-BASED METHODS IN FLUID MECHANICS
MS Organizers: Sergio Idelsohn, Eugenio Oñate
Chair: Sergio Idelsohn, Eugenio Oñate

8341 **KEYNOTE:** A VARIATIONAL, FIC-BASED FORMULATION FOR PARTICLE FINITE ELEMENT METHODS STABILIZED WITH HIGH ORDER SPATIAL DERIVATIVES
***Carlos Felippa**, Eugenio Onate, Sergio Idelsohn*

8420 GENERALIZATION OF MESHFREE COMPACT SCHEMES AND THEIR APPLICATIONS
***Tasuku Tamai**, Seiichi Koshizuka*

5457 LARGE-SCALE PARTICLE SIMULATIONS FOR DEBRIS FLOWS USING DYNAMIC LOAD BALANCE WITH SPACE FILLING CURVES ON A GPU-RICH SUPERCOMPUTER
***Satori Tsuzuki**, Takayuki Aoki*

6508 TOWARDS CFD BASED PROCESS MONITORING – RECURRENCE CFD
***Stefan Pirker**, Thomas Lichtenegger*

7161 DISCRETE GRADIENT THEOREM AND ELEMENT-BASED INTEGRATION IN MESHLESS METHODS
***Guillaume Pierrot**, Gabriel Fougeron*

Wednesday, June 8 **Danae**
11:00-13:00

MS 923 - 2: NOVEL DISCRETIZATION METHODS – MATHEMATICAL AND MECHANICAL ASPECTS
MS Organizers: Jörg Schröder, Peter Wriggers, Ferdinando Auricchio, Carsten Carstensen
Chair: Jörg Schröder

5298 A SHELL ELEMENT FOR LAMINATED STRUCTURES WITH CONTINUOUS INTERLAMINAR SHEAR STRESSES
***Friedrich Gruttmann**, Werner Wagner, Gregor Knust*

11298 MODELING OF ROBUST MIXED FINITE ELEMENTS FOR ANISOTROPIC INCOMPRESSIBLE MATERIALS
***Alex Kraus**, Peter Wriggers, Ferdinando Auricchio, Jörg Schröder*

5842 A NOVEL FINITE ELEMENT FOR ANISOTROPY
***Nils Viebahn**, Jörg Schröder, Peter Wriggers, Daniel Balzani*

8016 TWO-DIMENSIONAL DISCONTINUOUS GALERKIN METHOD FOR SMALL AND LARGE DEFORMATIONS
***Tobias Steiner**, Peter Wriggers, Carsten Carstensen*

10524 INVESTIGATION OF ELASTO-PLASTIC FRACTURE BY A PHASE FIELD MODEL
***Timo Noll**, Charlotte Kuhn, Ralf Müller*

Wednesday, June 8 **Minos South**
11:00-13:00

MS 408 - 1: MANIPULATION AND CONTROL OF TURBULENT FLOW
MS Organizers: Markus Rütten, Christina Voß
Chair: Markus Rütten, Christina Voß

7435 THE SENSITIVITY OF LAMINAR-TURBULENT TRANSITION TO TOLLMIEN-SCHLICHTING WAVE FREQUENCY
***Amir Banari**, Christian Janssen, Thomas Rung, Lars-Uve Schrader, Jochen Marzi*

8282 NOVEL ACTUATOR FOR FLOW MANIPULATION BY FOCUSED ACOUSTIC WAVES
***Christian Kiefer**, Dara Feili, Helmut Seidel*

CS 310: CAD, CAM AND CAE
Chair: Stanislav Makhanov

4368 VECTOR FIELD GUIDED TOOL PATHS FOR FIVE-AXIS MACHINING
Stanislav Makhanov

6558 AN 'A PRIORI' MODEL REDUCTION FOR ISOGEOMETRIC BOUNDARY ELEMENT METHOD
***Shengze Li**, Jon Trevelyan, Weihua Zhang, Xuanzhu Meng*

8693 RESEARCH OF DEFORMATION QUALITIES OF POROUS MATERIALS ENHANCING COMPUTER DESIGN OF WETSUIT
Irina Cherunova, Elena Sirota, Nikolai Kornev, Mathias Paschen, Sebastian Schreier, Tatyana Lesnikova, ***Pavel Cherunov***

10653 MATHEMATICAL MODELLING OF CITY AERODYNAMICS
***Svetlana Valger**, Natalya Fedorova, Alexander Fedorov*

Wednesday, June 8 **Europa**
11:00-13:00

MS 714 - 2: STRENGTH, FATIGUE AND STABILITY OF COMPOSITE STRUCTURES
MS Organizers: Raimund Rolfes, Martin Ruess, Kai-Uwe Schröder
Chair: Kai-Uwe Schröder, Raimund Rolfes

8560 HCF DAMAGE MODEL FOR FATIGUE IN COMPOSITES
***Lucia Gratiela Barbu**, Xavier Martinez, Sergio Oller, Alex H. Barbat*

9458 VALIDATION AND CORRELATION OF AIRCRAFT COMPOSITE FUSELAGE STRUCTURE MODELS
***W.J. Vankan**, W.M. van den Brink, R. Maas*

4752 MODELING MODE I AND MODE II DELAMINATION IN CFRP LAMINATES
***Jaan-Willem Simon**, Daniel Höwer, Stefanie Reese*

5838 ON THE STRUCTURAL DESIGN OF IMPERFECTION SENSITIVE LAMINATED COMPOSITE SHELL STRUCTURES SUBJECTED TO AXIAL COMPRESSION
***Linus Friedrich**, Pawel Lyssakow, Garth Pearce, Martin Ruess, Chiara Bisagni, Kai-Uwe Schröder*

6237 STRENGTH AND WEIGHT EQUIVALENT SUBSTITUTION OF LARGE SANDWICH PANELS BY MONOLITHIC CFRP STRUCTURES
***Martin Meindlhumer**, Martin Schagerl*

7717 PREDICTION OF STRENGTH AND GLOBAL FAILURE BEHAVIOR OF COMPLEX JOINT CONFIGURATIONS IN COMPOSITES
***Sven Scheffler**, Aamir Dean, Raimund Rolfes*

Wednesday, June 8 **Leda**
11:00-13:00

MS 1001 - 6: STRUCTURAL AND MULTIDISCIPLINARY OPTIMIZATION

MS Organizers: J.F. Aguilar Madeira, Helder C. Rodrigues
Chair: Koen van der Blom

5930 **KEYNOTE:** ANALYSIS AND DESIGN OF REINFORCED CONCRETE STRUCTURES AS A TOPOLOGY OPTIMIZATION PROBLEM
Matteo Bruggi

5403 A METHOD FOR BI-DIRECTIONAL COUPLING OF STRUCTURE AND SYSTEM IN THE OPTIMISATION OF MULTI-FUNCTIONAL COMPONENTS
***Ajit Panesar**, Ian Ashcroft, Ricky Wildman, Richard Hague*

8578 OPTIMAL DESIGN OF SKELETAL STRUCTURES WITH BUCKLING CONSIDERATIONS USING NONLINEAR BEAM MODELING
***Hazem Madah**, Oded Amir*

9029 CURVATURE APPROXIMATION ON THREE-DIMENSIONAL FE-MESHES USING THE EMBEDDED WEINGARTEN MAP
***Oliver Schmitt**, Paul Steinmann*

8393 TWO-SCALE TOPOLOGY OPTIMIZATION METHOD FOR COMPOSITE PLATE WITH IN-PLANE UNIT CELLS
***Shinnosuke Nishi**, Kenjiro Terada, Junji Kato*

Wednesday, June 8 **Athena**
11:00-13:00

MS 504 - 2: NUMERICAL METHODS AND TOOLS FOR KEY EXASCALE COMPUTING CHALLENGES IN ENGINEERING AND APPLIED SCIENCES

MS Organizers: Eugenio Oñate, Manolis Papadrakakis, Peter Wriggers
Chair: Peter Wriggers

10615 ACCELERATING COMMERCIAL FEA SOFTWARE THROUGH ADVANCED COMPUTATIONAL TECHNOLOGIES
Vladimir Belsky

12125 PARALLEL AND SCALABLE SOLUTION SCHEMES FOR METAHEURISTIC OPTIMIZATION ALGORITHMS CONSIDERING UNCERTAINTIES, IN THE CONTEXT OF STRUCTURAL ANALYSIS
***George Stavroulakis**, Dimitris Giovanis, Vissarion Papadopoulos, Manolis Papadrakakis*

7366 ERROR ANALYSIS AND QUANTIFICATION IN NEURON SIMULATIONS
***Francesco Casalegno**, Francesco Cremonesi, Stuart Yates, Felix Schürmann, Fabien Delalondre*

MS 810: CONSIDERING THE VERY SMALL SCALES IN COMPUTATIONAL MECHANICS: ATOMISTIC AND QUANTUM MECHANICS-BASED METHODS

MS Organizers: Amelie Fau, Roger Sauer
Chair: Amelie Fau

11926 COMPUTATIONAL MULTISCALE MODELING OF ADHESIVE MICROSTRUCTURES
***Janine Mergel**, Roger Sauer*

6337 ON THE ADAPTIVE FINITE ELEMENT APPROACHES APPLIED TO PDES IN QUANTUM MECHANICS
***Denis Davydov**, Jean-Paul Pelteret, Toby D. Young, Paul Steinmann*

10983 FINITE ELEMENT APPROACH FOR QUANTUM COMPUTATIONS OF CRYSTAL STRUCTURES
Amelie Fau

Wednesday, June 8 **Artemis**
11:00-13:00

CS 830: COMPUTATIONAL NANOTECHNOLOGY

Chair: Oleksandr Voskoboynikov

5357 SIMULATION OF SUPPRESSION AND RESTORATION OF THE AHARONOV-BOHM-TYPE OSCILLATIONS FOR ELECTRONS AND HOLES IN SELF-ASSEMBLED ASYMMETRICAL INAS/GAAS QUANTUM RINGS
Oleksandr Voskoboynikov

5112 NUMERICAL ANALYSIS ON THE MECHANICAL BEHAVIORS OF CARBON NANOTUBE NANOCOMPOSITES
***Lu-Wen Zhang**, K.M. Liew*

7929 EFFECT OF NANOSIZED ASPERITIES AT THE SURFACE OF A NANOHOLE
*Mikhail Grekov, **Aleksandra Vakaeva***

11385 NANODROPLET DEPINNING FROM NANOPARTICLE
***Fong Yew Leong**, Liu Qi, Utkur Mirsaidov*

9273 NANOSCALE PHASE FIELD MODELING OF TEMPERATURE- AND STRESS-INDUCED MARTENSITIC PHASE TRANSFORMATIONS
Valery Levitas

Wednesday, June 8 **Aphrodite**
11:00-13:00

MS 103 - 2: MECHANICS OF BIOLOGICAL TISSUES

MS Organizers: Markus Böl, Gerhard A. Holzapfel
Chair: Markus Böl

7656 SKIN SURFACE VIBRATIONS INDUCED BY CARDIOVASCULAR DYNAMICS: BIOMECHANICS OF MECHANICAL WAVE PROPAGATION THROUGH SOFT BIOLOGICAL TISSUES
***Daniela Tommasin**, Viviana Mancini, Annette Caenen, Simon Shaw, Abigail Swillens, Stephen E. Greenwald, Patrick Segers*

8939 THE EFFECT OF SMOOTH MUSCLE CONTRACTILITY ON ARTERIAL GROWTH AND REMODELLING
*Stefan Lindstrom, **Jonas Stålhand**, Anders Klarbring*

9120 LOADING-RATE DEPENDEND ARTICULAR CARTILAGE DAMAGE; EXPERIMENTAL DATA AND A NON-LOCAL DAMAGE MODEL
***Corrinus van Donkelaar**, Juan Párraga-Quiroga, Lorenza Henao-Murillo, Wouter Wilson, Keita Ito*

11025 LARGE SCALE PHASE FIELD MODEL OF FRACTURE AND CUTTING OF SOFT TISSUES
***Vahid Ziaei-Rad**, Jack S. Hale, Corrado Maurini, Stéphane P.A. Bordas*

11339 CELL NUCLEUS MEMBRANE MODELING THROUGH SHELL TANGENTIAL DIFFERENTIAL CALCULUS
***Denis Aubry**, Solenne Devereaux, Rachele Allena,*

7606 A PHASE-FIELD APPROACH TO MODEL FRACTURE OF ARTERIAL WALLS
***Osman Gültekin**, Hüsnü Dal, Gerhard A. Holzapfel*

Wednesday, June 8 **Antigoni**
11:00-13:00

MS 806 - 5: MULTISCALE MODELLING OF MATERIALS AND STRUCTURES

MS Organizers: Tadeusz Burczyński, Xavier Oliver, Maciej Pietrzyk, Alfredo Huespe

Chair: Xavier Oliver

9447 **KEYNOTE:** GENERATION OF GRAPHENE-LIKE ATOMS STRUCTURES BY MEANS OF MEMETIC ALGORITHMS
***Tadeusz Burczyński**, Adam Mrozek, Wacław Kuś*

11244 NUMERICAL TOOLS FOR MULTI-SCALE MATERIAL DESIGN AND STRUCTURAL TOPOLOGY OPTIMIZATION
***Juan Cante**, Alex Ferrer, Javier Oliver*

9937 MOLECULAR DYNAMICS/STATICS SIMULATION OF NI-AL NANOPARTICLES SINTERING
***Marcin Maździarz**, Jerzy Rojek, Szymon Nosewicz*

9027 MULTISCALE MODELS OF METALS BEHAVIOR AT THE HIGH-VELOCITY IMPACT AND UNDER THE HIGH-CURRENT ELECTRON IRRADIATION
***Alexander Mayer**, Vasiliy Krasnikov, Polina Mayer*

Wednesday, June 8 **Apollo East**
11:00-13:00

MS 801 - 4: MULTISCALE COMPUTATIONAL HOMOGENIZATION FOR BRIDGING SCALES IN THE MECHANICS AND PHYSICS OF COMPLEX MATERIALS

MS Organizers: Julien Yvonnet, Kenjiro Terada, Peter Wriggers, Marc Geers

Chair: Julien Yvonnet

11749 **KEYNOTE:** MULTISCALE MODELLING OF SOFT MATERIALS
Patrick Le Tallec

10778 DISTRIBUTION-ENHANCED HOMOGENIZATION: APPLICATION TO DUCTILE FRACTURE IN DYNAMICALLY LOADED BCC TANTALUM
***Coleman Alleman**, Somnath Ghosh, D. J. Luscher, Curt Bronkhorst*

10882 HOMOGENIZATION OF STRAIN-CRYSTALLIZING RUBBER-LIKE MATERIALS
***Reza Rastak**, Christian Linder*

11352 HOMOGENIZATION METHOD FOR DESIGNING NOVEL ARCHITECTURED CELLULAR MATERIALS
Zheng-Dong Ma

5007 A MULTI-SCALE MODELING METHOD FOR HETEROGENEOUS STRUCTURES WITHOUT SCALE SEPARATION USING A FILTER-BASED HOMOGENIZATION SCHEME.
***Amen Tognevi**, Mohamed Guerich, Julien Yvonnet*

Wednesday, June 8 **Apollo West**
11:00-13:00

CS 450 - 1: NUMERICAL METHODS AND CONVERGENCE ACCELERATION IN CFD

Chair: Jan Nordström

5408 IMPROVED DUAL TIME–STEPPING BY USING SECOND DERIVATIVES
***Jan Nordström**, Andrea Ruggiu*

4675 A POSITIVITY-PRESERVING, DEFECT-CORRECTION MULTIGRID METHOD FOR TURBULENT AND CHEMICALLY REACTING FLOWS
***Mark Wasserman**, Yair Mor-Yossef, J. Barry Greenberg*

4918 A MULTIGRID FORMULATION FOR FINITE DIFFERENCE METHODS ON SUMMATION-BY-PARTS FORM: AN INITIAL INVESTIGATION
***Andrea Alessandro Ruggiu**, Per Weinerfelt, Tomas Lundquist, Jan Nordström*

6872 PERFORMANCE IMPROVEMENT OF FLOW COMPUTATIONS WITH AN OVERSET-GRID METHOD INCLUDING BODY MOTIONS USING A FULL MULTIGRID METHOD
***Kunihide Ohashi**, Hiroshi Kobayashi*

7593 SOLVING LINEAR SYSTEMS WITH MULTIPLE RIGHT-HAND SIDES WITH GMRES : AN APPLICATION TO AIRCRAFT DESIGN
***Aloïs Bissuel**, Grégoire Allaire, Laurent Daumas, Frédéric Chalot, Michel Mallet*

7884 HIGH-ORDER EXPLICIT STAGGERED SCHEME FOR THE SHALLOW WATER EQUATIONS
***Nicolas Therme**, Raphaèle Herbin, Jean-Claude Latché*

Wednesday, June 8 **Room 1**
11:00-13:00

MS 409 - 2: CURRENT TRENDS IN MODELLING AND SIMULATION OF TURBULENT FLOWS

MS Organizers: Suad Jakirlić, ERCOFTAC SIG15

Chair: Suad Jakirlić

11019 COMPARATIVE ASSESSMENT OF SOME POPULAR SCALE-RESOLVING MODELS BY RELEVANCE TO SEPARATING FLOW IN A 3D DIFFUSER
***Suad Jakirlic**, Gisa John-Putenveettil, Imdat Maden, Robert Maduta*

10243 COMPARISON OF TWO APPROACHES TO ACCELERATING SECONDARY TRANSITION TO TURBULENCE IN SEPARATED SHEAR LAYERS IN THE FRAMEWORK OF DELAYED DETACHED EDDY SIMULATION
***Ekaterina Guseva**, Andrey Garbaruk, Mikhail Strelets*

10023 ASSESSMENT OF RANS AND DES METHODS FOR THE AHMED BODY
***Emmanuel Guilmineau**, Gan Bo Deng, Alban Leroyer, Patrick Queutey, Michel Visonneau, Jeroen Wackers*

12284 AN IMPROVED SYNTHETIC EDDY METHOD APPLIED TO INTERNAL PIPE FLOWS
***Joshua Holgate**, Alex Skillen, Alistair Revell, Tim Craft*

8792 A STRUCTURED-BASED MODEL FOR THE STUDY OF TURBULENT STATISTICS IN HOMOGENEOUS STABLY STRATIFIED FLOWS
*Constantinos Panagiotou, **Stavros Kassinos***

8973 ON THE APPLICATION OF MODERN TURBULENCE MODELS IN THE FLOW LAMINARIZATION PROBLEMS
*Sergey Chernyshev, Aleksander Ivanov, **Andrey Kiselev**, Dmitriy Sboev, Leonid Teperin, Petr Vorotnikov, Valeriy Vozhdaev*

Wednesday, June 8 **Room 2**
11:00-13:00

STS 3 - 2: INNOVATIVE DESIGN OPTIMIZATION TOOLS LINKED TO INDUSTRIAL AERONAUTICAL APPLICATIONS: TARGETING GREENER PERFORMANCES

STS Organizers: Jacques Periaux, Gabriel Bugeda
Chair: Gabriel Bugeda

14253 ACTIVE FLOW CONTROL TO DELAY HIGH-SPEED STALL: 2D FLUIDIC GURNEY OPTIMIZATION
Mauro Minervino, ***Domenico Quagliarella***

14269 SHAPE OPTIMIZATION FOR GREENER AIRCRAFT: THE DASSAULT AVIATION VISION AND PERSPECTIVES
Gilbert Roge*, S. Kleinveld, X. Loyatho, L. Daumas*

14286 TWO OBJECTIVE OPTIMISATION OF NATURAL LAMINAR FLOW OF NATURAL LAMINAR AIRFOIL OPERATING WITH ACTIVE SHOCK CONTROL BUMP USING EAS AND GAMES STRATEGIES
Zhili Tang*, Yongbin Chen, Jacques Periaux*

14287 CAD-BASED AERODYNAMIC SHAPE OPTIMIZATION USING GEOMETRY SURROGATE MODEL AND ADJOINT METHODS
Eusebio Valero

13092 THREE-DIMENSIONAL BIN PACKING PROBLEM WITH A STABILITY REJECTION CRITERION
Teemu Linkosaari*, Tero Urponen, Henrik Juvonen, Marko Mäkelä, Yury Nikulin*

16599 ACCURACY ASSESSMENT OF GENERALIZED PARAMETRIC SOLUTIONS FOR OPTIMIZATION AND UNCER-TAINTY QUANTIFICATION
Gabriel Bugeda, *Jordi Pons-Prats*

Wednesday, June 8 **Room 3**
11:00-13:00

MS 1203: THE MODELS AND INVESTIGATIONS METHODS OF DYNAMICS OF THE SOLIDS SYSTEMS WITH DRY FRICTION

MS Organizers: Alexey A. Kireenkov, Alexander V. Karapetyan
Chair: Alexey A. Kireenkov

9248 ABOUT DYNAMICS OF A SYMMETRIC SOLIDS IN THE CASE OF COMBINED KINEMATICS
Alexey Kireenkov

11184 TESTING, SIMULATING AND UNDERSTANDING UNDER-PLATFORM DAMPER DYNAMICS
Chiara Gastaldi*, Muzio M. Gola*

8756 THE MODEL AND INVESTIGATION OF DYNAMICS OF THE SOLID SYSTEM WITH TWO MASSIVE ECCENTRICS ON A ROUGH PLANE
Sergey Semendyaev*, Alexey Tsyganov*

7910 VIRTUAL TESTBENCH FOR THE OMNI WHEEL DYNAMICS SIMULATION: NEW CONTACT TRACKING ALGORITHM
Ivan Kosenko*, Sergey Stepanov, Kirill Gerasimov, Mikhail Stavrovskiy*

9025 NON-REGULAR VEHICLE DYNAMICS. APPLICATION TO COLLISION
Ahmed Bouzar Essaidi*,Bachir Menkouz, Moussa Haddad, Taha Chettibi*

Wednesday, June 8 **Room 4**
11:00-13:00

CS 1200 - 3: STRUCTURAL DYNAMICS
Chair: Luis Mesquita

12007 COMPUTATIONAL MODELLING OF COLD-FORMED STEEL SCREWED CONNECTIONS AT AMBIENT AND ELEVATED TEMPERATURES
Luis Mesquita*, Rui Dias, Armandino Parente, Paulo Piloto*

16132 MONITORING AND ANALYSIS OF STRESS FIELD FOR ORTHOTROPIC STEEL DECK OF DASHENGGUAN YANGZTE RIVER BRIDGE
Ying Wang, *Y.S. Song*

8173 MODELING OF DEFORMABLE CRASH BARRIERS FOR LUMPED MASS MODELS USING THE EXAMPLE OF NHTSA MDB
Michael Pabst*, Lailong Song, Johannes Fender, Fabian Duddeck*

5779 RESEARCH ON HYSTERETIC BEHAVIORS OF A NEW SAPARATED SHOCK ABSORBER APPLIED IN RAILWAY BRIDGE
Aili Li*, Ri Gao, Mingde Sun, Jilei Zhang*

12005 UNCERTAINTY OF MODELS IN INTELLIGENT SYSTEMS UNDER STOCHASTIC LOADING
Amalia Moutsopoulou*, Georgios Stavroulakis, Tasos Pouliezos*

Wednesday, June 8 **Room 5**
11:00-13:00

CS 410 - 5: COMPUTATIONAL FLUID MECHANICS
Chair: Bulent Duz

10351 NUMERICAL SIMULATION OF NONLINEAR FREE SURFACE WATER WAVES USING A COUPLED POTENTIAL FLOW-URANS/VOF APPROACH
Bulent Duz*, Tim Bunnik, Geert Kapsenberg*

5578 SURFACE-FORCES ON DEFORMING GEOMETRIES USING VORTEX METHODS AND BRINKMAN PENALIZATION
Siddhartha Verma*, Gabriele Abbati, Petros Koumoutsakos*

7719 BUDGET ANALYSIS OF TURBULENT KINETIC ENERGY IN CORNER SEPARATION : RANS VS LES
Jean-François Monier*, Feng Gao, Jérôme Boudet, Liang Shao, Lipeng Lu*

10393 APPLICATION OF THE BDDC METHOD FOR INCOMPRESSIBLE FLOWS
Martin Hanek*, Jakub Šístek, Pavel Burda*

10753 AN EXPLICIT IMPLICIT SCHEME FOR CARTESIAN EMBEDDED BOUNDARY MESHES
Sandra May*, Marsha Berger*

Wednesday, June 8 **Room 7**
11:00-13:00

CS 720 - 1: COMPUTATIONAL MATERIALS SCIENCE
Chair: Viwanou Hounkpati

5326 ON THE INFLUENCE OF THE INCLUSIONS' MORPHOLOGY ON THE ACCURACY OF THE PREDICTION OF REINFORCED COMPOSITES MECHANICAL BEHAVIOUR
Viwanou Hounkpati*, Vladimir Salnikov, Philippe Karamian-Surville, Alexandre Vivet*

11038 SIMULATION OF PRECIPITATION IN V-CONTAINING HSLA STEEL FOR THE STRENGTHENING ENHANCEMENT
***Piyada Suwanpinij**, Paolo Massaro, Annalisa Pola, Prasonk Srichareonchai*

6821 NUMERICAL MODELLING OF THE EFFECT OF THERMAL RESIDUAL STRESS ON MECHANICAL PROPERTIES OF METAL-CERAMIC COMPOSITES
***Witold Weglewski**, Michal Basista, Kamil Bochenek*

9895 PHASE-FIELD SIMULATION OF EUTECTIC SOLIDIFICATION USING NURBS-BASED ISOGEOMETRIC ANALYSIS
***Resam Makvandi**, Daniel Juhre, Omid Kazemi, Thorsten Halle*

5593 MODELING THE DEFORMATION BEHAVIOR OF SMALL-SCALED SINGLE CRYSTALS
***Edgar Husser**, Swantje Bargmann*

10861 STOCHASTIC FINITE ELEMENT APPROACH FOR MODELLING OF THE PHASE TRANSFORMATION AND RESIDUAL STRESS IN THE QUENCHING SINCE INTERCRITICAL TEMPERATURES IN MEDIUM CARBON STEELS
Carlos Arturo Bohorquez Avila

Wednesday, June 8 **Room 8**
11:00-13:00

MS 1201 - 1: COMPUTATIONAL STRUCTURAL DYNAMICS
MS Organizers: Evangelos J. Sapountzakis, Andreas E. Kampitsis
Chair: Evangelos J. Sapountzakis

4747 **KEYNOTE:** A FIBRE PLASTICITY MODEL FOR THE DYNAMIC ANALYSIS OF WIND TURBINE TOWERS
*Andreas Kampitsis, **Evangelos Sapountzakis***

5811 HARMONICALLY FORCED NON-LINEAR VIBRATIONS OF PLATES MADE FROM ZENER MATERIAL
*Roman Lewandowski, **Przemyslaw Litewka***

5117 FLEXURAL VIBRATION ANALYSIS OF GRAPHENE NANOPLATELETS REINFORCED NANOCOMPOSITE BEAMS
***Jie Yang**, Chuang Feng*

7521 DYNAMIC ANALYSIS OF SPECIAL CARS ON UNEVEN ROADS
Szymon Tengler

8083 WAVE PROPAGATION IN THIN PRETWISTED ANISOTROPIC STRIPS
*Maloth Thirupathi, Mira Mitra, **P J Guruprasad***

Wednesday, June 8 **Room 9**
11:00-13:00

MS 1217 - 3: COMPUTATIONAL METHODS IN EARTHQUAKE ENGINEERING AND STRUCTURAL DYNAMICS
MS Organizers: Vagelis Plevris, Georgia Kremmyda, Yasin Fahjan
Chair: Vagelis Plevris

9633 COMPUTATIONAL EFFICIENCY IN NONLINEAR TIME-HISTORY ANALYSIS OF TALL BUILDING STRUCTURES
*Ramazan Ayazoglu, **Baris Erkus***

8453 AN INVESTIGATION ON EFFECT OF SUBGRADE REACTION MODULUS OF SOIL ON NATURAL PERIOD OF LOW RISE BUILDINGS
*Rafet Sisman, **Abdurrahman Sahin***

4612 SEISMIC BEHAVIOR INDICES OF OLD TYPE REINFORCED CONCRETE MEMBERS
***Anthos Ioannou**, Stavroula J. Pantazopoulou*

10389 EFFECT OF THE SEISMIC EXCITATION'S INCIDENCE ANGLE ON THE NONLINEAR BEHAVIOR OF BASE ISOLATED BUILDINGS CONSIDERING POUNDING TO ADJACENT MOAT WALLS
***Eftychia A. Mavronicola**, Panayiotis C. Polycarpou, Petros Komodromos*

6045 ENERGY-MOMENTUM METHOD FOR NONLINEAR DYNAMIC OF 2D COROTATIONAL BEAMS
***Sophy Chhang**, Mohammed Hjiaj, Jean-Marc Battini, Carlo Sansour*

Wednesday, June 8 **Room 10**
11:00-13:20

MS 414 - 1: NEW TRENDS IN NUMERICAL METHODS FOR MULTI-MATERIAL COMPRESSIBLE FLUID FLOWS
MS Organizers: Andy Barlow, Michael Dumbser, Raphaël Loubère, Pierre-Henri Maire, Rob Rieben, Mikhail Shashkov, François Vilar
Chair: Renaud Motte

10551 AN ENTROPY CONSERVATIVE AND DISSIPATIVE FINITE VOLUME METHOD FOR SOLVING GAS DYNAMICS EQUATIONS WRITTEN UNDER LAGRANGIAN UPDATED FORM
***Pierre-Henri Maire,** Bernard Rebourcet*

12210 BUILDING A MORE EFFICIENT LAGRANGE-REMAP SCHEME THANKS TO PERFORMANCE MODELING
***Thibault Gasc**, Florian De Vuyst, Mathieu Peybernes, Raphaël Poncet, Renaud Motte*

4725 A HIGH-ACCURATE SPH-RIEMANN-MOOD METHOD
***Xesús Nogueira**, Luis Ramírez, Stéphane Clain, Raphaël Loubère, Luis Cueto-Felgueroso, Ignasi Colominas*

7031 2D AXISYMMETRIC EXTENTION OF THE LAGRANGIAN CSTS (CONSERVATIVE SPACE- AND TIME-STAGGERED) HYDRODYNAMIC SCHEME
***Alexis Marboeuf**, Alexandra Claisse, Patrick Le Tallec, Antoine Llor*

7453 SOME ACOUSTIC-TRANSPORT SPLITTING SCHEMES FOR TWO-PHASE COMPRESSIBLE FLOWS
***Simon Peluchon**, Gérard Gallice, Pierre-Henri Maire*

11851 SLOPE LIMITING FOR TENSORS: BOUNDING BOX (BB) BASED MONOTONICITY AND SYMMETRY PRESERVING LIMITERS IN MULTI-DIMENSIONAL FLOWS.
Gabi Luttwak

5258 A DIRECT ARBITRARY-LAGRANGIAN-EULERIAN TVD FINITE VOLUME SCHEME ON NONCONFORMING MOVING UNSTRUCTURED MESHES: LOGICALLY STRAIGHT SLIP-LINES
***Elena Gaburro**, Michael Dumbser*

Wednesday, June 8 **Room 11**
11:00-13:00

MS 410 - 2: COMPLEX FLUID FLOWS IN ENGINEERING: MODELLING, SIMULATION AND OPTIMIZATION
MS Organizers: Stefanie Elgeti, Philipp Knechtges
Chair: Stefanie Elgeti

9107 NUMERICAL SIMULATION OF HEAT TRANSFER IN AN OPEN ROTOR-STATOR SYSTEM
***Alireza Rasekh**, Peter Sergeant, Jan Vierendeels*

8631 COMPARATIVE STUDY OF GRANULAR SOIL MODELS USING PARTICLE AND MESH-BASED SCHEMES
***Wibke Ricarda Wriggers**, Antonia Larese, Svenja Völkner, Eugenio Oñate, Thomas Rung*

12019 MATHEMATICAL MODELLING OF BIOMASS GASIFICATION IN A SMALL FIXED BED REACTOR
***Zbigniew Buliński**, Tomasz Krysiński, Sebastian Werle, Łukasz Ziółkowski*

5911 TOPOLOGY OPTIMIZATION FOR FLUID FLOW EMPLOYING LOCAL OPTIMALITY CRITERIA
***Philip Sarstedt**, Gerhard Kachel, Jörg Ettrich, Karl Bühler*

10678 VALIDATION AND VERIFICATION OF A 2D LATTICE BOLTZMANN SOLVER FOR INCOMPRESSIBLE FLUID FLOW
*Tamás István Józsa, Máté Szőke, Tom-Robin Teschner, **László Könözsy**, Irene Moulitsas*

10992 MODELING OF NON-NEWTONIAN MULTIPHASE FLOW USING ADAPTIVE STABILIZED FINITE ELEMENT METHOD
***Elie Hachem**, Stephanie Riber, Mehdi Khalloufi, Youssef Mesri, Rudy Valette*

Wednesday, June 8 **Room 12**
11:00-13:00

MS 1003 - 1: ADVANCES IN DESIGN OPTIMIZATION OF STRUCTURES AND MATERIALS
MS Organizers: Zhen Luo, Zhan Kang
Chair: Zhan Kang, Zhen Luo

7802 AN IMPROVED LEVEL SET METHOD FOR TOPOLOGY OPTIMIZATION BASED ON TOPOLOGICAL SENSITIVITY ANALYSIS
*Tao Wu, **Yang Zhang**, Jirui Lin, Yansong Zhao, Wenjiao Bian*

5376 SHAPE OPTIMIZATION OF GRAPHENE SHEETS FOR MAXIMUM FUNDAMENTAL FREQUENCY
***Jin-Xing Shi**, Masatoshi Shimoda*

6839 A LEVEL SET BASED MULTIPLE-TYPE BOUNDARY METHOD FOR STRUCTURAL TOPOLOGY OPTIMIZATION
***Qi Xia**, Tielin Shi, Michael Yu Wang*

6855 CROSS-SECTION TOPOLOGY OPTIMIZATION OF TRUCK CRANE TELESCOPIC BOOM
*Yongfeng Zheng, **Youmin Hu**, Bo Wu, Tielin Shi, Yanlei Li, Jikai Fan, Yingyi Qin*

6547 TOPOLOGICAL DESIGN OF MECHANICAL METAMATERIALS WITH ADDITIVE MANUFACTURING
***Zhen Luo**, Hao Li*

Wednesday, June 8 **Room 15**
11:00-13:00

MS 905 - 1: DISCONTINUOUS GALERKIN METHODS: NEW TRENDS AND APPLICATIONS
MS Organizers: Sonia Fernández-Méndez, Nicoletta Franchina
Chair: Sonia Fernández-Méndez, Nicoletta Franchina

9074 **KEYNOTE:** A FULLY DISCRETE ADJOINT DISCONTINUOUS GALERKIN METHOD FOR PDE-CONSTRAINED TIME-PERIODIC OPTIMIZATION
***Per-Olof Persson**, Matthew Zahr*

9046 A WALL-MODELING STRATEGY USING A SPECTRAL-ELEMENT SPACE-TIME DISCONTINOUS GALERKIN SOLVER
***Corentin Carton de Wiart**, Laslo Diosady, Scott Murman*

7607 A MULTIPLE REFERENCE-FRAME FORMULATION FOR THE DISCONTINUOUS GALERKIN METHOD
***Jean-Sébastien Cagnone**, Koen Hillewaert*

8888 HYBRID PARALLELIZATION OF MODAL-NODAL TRANSFORMATIONS FOR HIGH ORDER DISCONTINUOUS GALERKIN METHOD
***Nikhil Anand**, Harald Klimach, Sabine Roller*

8997 ANALYSIS OF THE DISCONTINUOUS GALERKIN METHOD FOR COMPRESSIBLE FLOW IN THE STEADY AND UNSTEADY LOW MACH REGIME
*Simon Delmas, **Vincent Perrier***

Wednesday, June 8 **Room 17**
11:00-13:00

CS 1300 - 3: UNCERTAINTY QUANTIFICATION AND ERROR ESTIMATION
Chair: Steffen Franke

9275 QUANTIFICATION OF SPATIAL VARIABILITY FOR TRANSVERSE ELASTIC MODULUS OF SPRUCE WOOD
*Alireza Farajzadeh Moshtaghin, **Steffen Franke**, Thomas Keller, Anastasios Vassilopoulos*

8718 MIASC: AN ADAPTIVE APPROACH TO UNCERTAINTY QUANTIFICATION IN DISCRETIZED PROBLEMS OF REDUCED REGULARITY - PART 2: APPLICATIONS IN BONE REMODELING AND ROUGH SURFACE CONTACT
***Maximilian R. Bittens**, Robert L. Gates, Udo Nackenhorst*

MS 1222: INFLUENCE OF LIQUEFIABLE SOIL ON SINGLE AND CLOSELY CLUSTERED STRUCTURES
MS Organizers: Nawawi Chouw, Rolly Orense, Tam Larkin
Chair: Nawawi Chouw

4517 NUMERICAL ANALYSES OF THE INFLUENCE OF STRUCTURAL SLENDERNESS ON THE SEISMIC RESPONSE OF SINGLE AND CLUSTERED STRUCTURES
*Gonzalo Barrios, Tam Larkin, **Nawawi Chouw***

4575 EFFECT OF HIGHER MODES ON STRUCTURAL RESPONSE WITH NONLINEAR SOIL-FOUNDATION-STRUCTURE INTERACTION
*Xiaoyang Qin, **Nawawi Chouw**, Tam Larkin*

Wednesday, June 8 **Room 18**
11:00-13:00

MS 1007 - 3: ADDITIVE MANUFACTURING AND OPTIMIZATION
MS Organizers: Ekkehard Ramm, Ole Sigmund, Pierre Duysinx, Wing Kam Liu
Chair: Pierre Duysinx, Michael Stingl

5907 **KEYNOTE:** COMPUTER AIDED TECHNOLOGIES FOR ADDITIVE MANUFACTURING
Tor Dokken

11420 MICROSTRUCTURE PREDICTION OF ADDITIVE MANUFACTURING PROCESSES THROUGH THERMODYNAMICALLY CONSISTENT ANALYSIS
***Wing Kam Liu**, Jacob Smith, Wei Xiong, Jian Cao*

11238 FIRST STEPS IN A PREDICTIVE MODEL FOR SURFACE VOID NUCLEATED FATIGUE
***Orion Kafka**, Wing Liu*

9561 A NEW CONCURRENT MULTISCALE MODELING STRATEGY CHARACTERIZING MICROSTRUCTURAL EVOLUTION DURING THE LASER ENGINEERED NET SHAPING PROCESS
***Stephen Lin**, Jacob Smith, Wing Kam Liu, Gregory Wagner*

Wednesday, June 8 **Room 20**
11:00-13:00

MS 907 - 2: REGULARIZED ENRICHED APPROXIMATIONS AND QUADRATURE FOR DISCONTINUITIES, SINGULARITIES AND CONTINUOUS-DISCONTINUOUS TRANSITION

MS Organizers: Elena Benvenuti, Giulio Ventura, José M.A. César de Sá
Chair: Elena Benvenuti

9126 ENRICHMENT-INDEPENDENT PENALTY STABILIZATION OF X-FEM
Giulio Ventura

6999 COHESIVE BAND MODEL: A TRIAXIALITY-DEPENDENT COHESIVE MODEL FOR DAMAGE TO CRACK TRANSITION IN A NON-LOCAL IMPLICIT DISCONTINUOUS GALERKIN FRAMEWORK
***Julien Leclerc**, Ling Wu, Ludovic Noels, Van-Dung Nguyen*

6204 LOCAL ERROR ANALYSIS OF THE FINITE ELEMENT METHOD FOR ELLIPTIC PROBLEM WITH A SINGULAR SOURCE TERM
*Astrid Decoene, **Loïc Lacouture**, Sébastien Martin, Bertrand Maury*

11072 WELL CONDITIONED AND OPTIMALLY CONVERGENT EXTENDED FINITE ELEMENTS AND VECTOR LEVEL SETS FOR THREE-DIMENSIONAL CRACK PROPAGATION
***Konstantinos Agathos**, Giulio Ventura, Eleni Chatzi, Stéphane P. A. Bordas*

Wednesday, June 8 **Room 21**
11:00-13:00

MS 404 - 4: SIMULATION OF ENVIRONMENTAL FLOWS

MS Organizers: Pablo Ortiz, Piotr K. Smolarkiewicz, Joanna Szmelter
Chair: Luca Bonaventura

7665 **KEYNOTE:** EFFICIENT TWO-DIMENSIONAL SIMULATION MODELS FOR HYDRAULIC AND MORPHODYNAMIC TRANSIENTS
***Pilar Garcia-Navarro**, Javier Murillo, Mario Morales-Hernandez, Carmelo Juez, Asier Lacasta*

6636 EFFICIENT DISCRETE APPROXIMATIONS OF DISPERSIVE WAVE MODELS FOR NEARSHORE HYDRODYNAMICS
*Andrea Filippini, Maria Kazolea, **Mario Ricchiuto***

8406 ADDRESSING THE CHALLENGES OF IMPLEMENTATION OF HIGH-ORDER FINITE-VOLUME SCHEMES FOR ATMOSPHERIC DYNAMICS ON UNSTRUCTURED MESHES
***Panagiotis Tsoutsanis**, Dimitris Drikakis*

6086 SHALLOW WATER AND HYDROSTATIC MODELS FOR SIMULATION OF WETTING-DRYING AREAS
Joanna Szmelter

9793 A MESHLESS METHOD FOR SIMULATION OF PARTICLE-DRIVEN GRAVITY CURRENTS WITH OBSTACLES
***Karel Kovářík**, Jozef Mužík, Dana Sitányiová*

Wednesday, June 8 **Room 22**
11:00-13:00

Olympiad - 2

Chair: Georgios Vogiatzis

16292 MULTISCALE SIMULATIONS OF POLYMER-MATRIX NANOCOMPOSITES
Georgios Vogiatzis

16436 ROCK MECHANICS, FAILURE PHENOMENA WITH PRE-EXISTING CRACKS AND INTERNAL FLUID FLOW THROUGH CRACKS
Mijo Nikolić

16358 TOWARDS OPTIMAL DESIGN OF MULTISCALE NONLINEAR STRUCTURES AND REDUCED-ORDER MODELING APPROACHES
Liang Xia

16410 LOW-DISSIPATION METHODS AND MODELS FOR THE SIMULATION OF TURBULENT SUBSONIC FLOW
***Wybe Rozema,** Arthur Veldman, Roel Verstappen, Johan Kok*

16293 NUMERICAL METHODS FOR THE YIELD DESIGN OF CIVIL ENGINEERING STRUCTURES
Jeremy Bleyer

6874 HYBRID RCAFE MODEL FOR FRACTURE MODELLING IN MULTI–PHASE MATERIALS
***Konrad Perzynski**, Lukasz Madej*

Wednesday, June 8 **Room 23**
11:00-13:00

MS 1009 - 3: ADJOINT METHODS FOR STEADY & UNSTEADY OPTIMIZATION

MS Organizers: Kyriakos C. Giannakoglou, Jens Dominik Mueller
Chair: Nicolas R. Gauger

8169 **KEYNOTE:** A TWO-LEVEL HYBRID APPROACH FOR OPTIMAL ACTIVE FLOW CONTROL ON A THREE-ELEMENT AIRFOIL
*Anil Nemili, **Emre Özkaya**, Nicolas R. Gauger, Felix Kramer, Frank Thiele*

9064 ASSESSING ADJOINT-DERIVED AERODYNAMIC SENSITIVITIES IN THE PRESENCE OF FLOW SEPARATION
***Thomas Economon**, Evangelos Papoutsis-Kiachagias, Ioannis Kavvadias, Nikolaos Magoulas, Carsten Othmer, Kyriakos Giannakoglou, Juan Alonso*

11263 A MIXED OPERATOR OVERLOADING AND SOURCE TRANSFORMATION APPROACH FOR ADJOINT CFD COMPUTATION
***Zahrasadat Dastouri**, Sinan Gezgin, Uwe Naumann*

6123 SPHERICITY: MESH OPTIMIZATION FOR ARBITRARY ELEMENT TOPOLOGY
***Pavlos Alexias**, Eugene De Villiers*

8801 STEADY & UNSTEADY CONTINUOUS ADJOINT METHOD USING A PSEUDO-COMPRESSIBILITY BLOCK COUPLED SOLVER IN OPENFOAM
***Christos Vezyris**, Evangelos Papoutsis-Kiachagias, Ioannis Kavvadias, Kyriakos Giannakoglou*

13:00-14:30
Lunch Break

PLENARY LECTURES

Wednesday, June 8 **Zeus**
14:30-16:45

Chair: Franco Brezzi

11438 GENERALIZED PARAMETRIC SOLUTIONS : A COMMODITY IN SIMULATION - BASED ENGINEERING
Antonio Huerta

12459 DISCONTINUOUS SKELETAL METHODS IN COMPUTATIONAL MECHANICS
Daniele A. Di Pietro, ***Alexandre Ern***

11433 ISOGEOMETRIC ANALYSIS: PAST, PRESENT, FUTURE
Thomas J.R. Hughes

16:45-17:15
Coffee Break

TECHNICAL SESSIONS

Wednesday, June 8 **Zeus East - West**
17:15-19:15

MS 113 - 4: MATHEMATICAL AND NUMERICAL MODELING OF THE HEART

MS Organizers: Luca Dede', Luca Pavarino, Alfio Quarteroni
Chair: Luca Dede', Luca Pavarino

8022 MODELLING CHALLENGES IN PERSONALISED LEFT-VENTRICULAR MECHANICS SIMULATIONS
***Liya Asner**, Myrianthi Hadjicharalambous, Radomir Chabiniok, Jack Lee, David Nordsletten*

12006 PREDICTING ACUTE CARDIAC RESYNCHRONISATION THERAPY EFFECTS THROUGH PATIENT SPECIFIC MODELLING
***Lauren Fovargue**, Simone Rivolo, Jessica Webb, Sophie Giffard-Roisin, Simon Clairidge, Tiffany Patterson, Liya Asner, Thomas Jackson, Eric Kerfoot, David Nordsletten, Maxime Sermesant, Reza Razavi, Nicolas P. Smith, Jack Lee*

5304 EXPERIMENT-BASED PARAMETER ESTIMATION FOR 3D-0D COUPLED PATIENT-SPECIFIC CARDIOVASCULAR DYNAMICS MODELS
***Marc Hirschvogel**, Marina Bassilious, Lasse Jagschies, Stephen M. Wildhirt, Michael W. Gee*

10892 REDUCED ORDER MODELS FOR THE EFFICIENT SOLUTION OF NONLINEAR PARAMETRIZED MECHANICAL PROBLEMS ARISING IN CARDIAC SIMULATIONS
***Diana Bonomi**, Andrea Manzoni, Alfio Quarteroni*

Wednesday, June 8 **Zeus North**
17:15-19:15

MS 901 - 5: ISOGEOMETRIC METHODS

MS Organizers: Yuri Bazilevs, David J. Benson, Rene De Borst, Thomas J.R. Hughes, Trond Kvamsdal, Alessandro Reali, Giancarlo Sangalli, Clemens V. Verhoosel
Chair: Ekkehard Ramm

11109 **KEYNOTE:** GOAL ORIENTED ADAPTIVE ISOGEOMETRIC METHODS WITH APPLICATIONS TO POROUS MEDIA
***Trond Kvamsdal**, Mukesh Kumar, Yared Bekele, Eivind Fonn, Arne Morten Kvarving, Lars Hov Odsaeter, Knut Morten Okstad*

10158 IDENTIFICATION OF MECHANICAL PROPERTIES USING IGA AND ISOGEOMETRIC STEREOCORRELATION
***John-Eric Dufour**, François Hild, Stéphane Roux*

10698 STUDY OF B-SPLINES FINITE ELEMENT DISCRETIZATION OF PHYSICS-BASED PRECONDITIONING FOR FLUID MECHANICS MODELS
***Emmanuel Franck**, Ahmed Ratnani, Eric Sonnendrücker, Stefano Serra-Capizzano, Mariarosa Mazza*

10811 ISOGEOMETRIC ANALYSIS OF DYNAMIC CRACK PROPAGATION BASED ON PHASE-FIELD MODELS
***Knut Morten Okstad**, Trond Kvamsdal, Arne Morten Kvarving*

10890 AN ISOGEOMETRIC SOLID SHELL ELEMENT FOR LARGE STRAIN PROBLEMS
***Pablo Antolin**, Annalisa Buffa, Josef Kiendl, Marco Pingaro, Alessandro Reali, Giancarlo Sangalli*

Wednesday, June 8 **Minos East**
17:15-19:15

MS 602 - 1: INNOVATIVE METHODS FOR FLUID-STRUCTURE-INTERACTION

MS Organizers: E. Harald van Brummelen, Roger Ohayon, Trond Kvamsdal
Chair: E. Harald van Brummelen

11007 **KEYNOTE:** COMPLEX-FLUID-SOLID INTERACTION BASED ON THE NAVIER-STOKES-CAHN-HILLIARD PHASE-FIELD EQUATIONS
***Harald van Brummelen**, Mahnaz Shokrpour Roudbari, Gertjan van Zwieten, Herman Wijshoff*

9232 GOAL-ORIENTED MESH ADAPTATION FOR MOVING MESH FSI PROBLEMS
***Eléonore Gauci**, Frédéric Alauzet, Alain Dervieux*

8663 HIGH RESOLUTION INTERFACE REPRESENTATION IN NUMERICAL FLUID STRUCTURE SIMULATIONS USING FINITE ELEMENT METHODS
***Bärbel Holm**, Johan Hoffman*

7107 AN AEROELASTIC ACTUATOR SECTOR METHOD FOR WIND TURBINES SIMULATION
***Athanasios Vitsas**, Johan Meyers*

11026 ARBITRARY HIGH ORDER TIME INTEGRATION WITH INTEGRAL DEFERRED CORRECTIONS APPLIED TO PARTITIONED FLUID-STRUCTURE INTERACTION
***David Blom**, Alexander van Zuijlen, Hester Bijl*

9451 A MONOLITHIC FLUID-STRUCTURE INTERACTION METHOD, APPLICATION TO A PISTON PROBLEM
Felix Ischinger, Martijn Anthonissen, ***Barry Koren***

Wednesday, June 8 **Minos North**
17:15-19:15

STS 5: TRANSITION LOCATION EFFECT ON SHOCK WAVE BOUNDARY LAYER INTERACTION

STS Organizers: Piotr Doerffer, Pawel Flaszynski
Chair: Pawel Flaszynski

15080 TRANSITION LOCATION EFFECT ON SHOCK WAVE INDUCED SEPARATION
Piotr Doerffer Doerffer

15070 AN EXPERIMENTAL AND NUMERICAL STUDY OF SHOCK BOUNDARY LAYER INTERACTION IN EXTERNAL AERODYNAMICS CONFIGURATIONS
***Marianna Braza**, Damien Szubert, Y. Hoarau, Flavien Billard*

15073 APPLICATION OF AIR JET VORTEX GENERATORS IN A HIGHLY LOADED TURBINE STATOR
Anna Petersen

15624 LOAD CONTROL OF NATURAL-LAMINAR-FLOW WING VIA BOUNDARY LAYER CONTROL
***Wieńczysław Stalewski**, Janusz Sznajder*

15078 LAMINAR-TURBULENT TRANSITION EFFECT ON SHOCK WAVE BOUNDARY LAYER INTERACTION ON COMPRESSOR PROFILE
***Pawel Flaszynski**, Piotr Doerffer, R. Szwaba*

Wednesday, June 8 **Minos South**
17:15-19:35

MS 112 - 5: ANEURYSMS: SOLID MECHANICS, FLUID MECHANICS, AND MECHANOBIOLOGY

MS Organizers: Christian J. Cyron, Sven Hirsch, Philippe Bijlenga, Roland C. Aydin, Anne M. Robertson, Gerhard A. Holzapfel

Chair: Philippe Bijlenga, Sven Hirsch

8275 COMPARISON OF CONTRAST AGENT TRANSPORT OBTAINED FROM CFD, 4D PC-MRI, AND DSA IN CEREBRAL ANEURYSMS
***Vitaliy Rayz**, Alireza Vali, Loic Boussel, Michael Lawton, David Saloner*

11949 SIMULATION OF FLOW DIVERSION IN CEREBRAL ANEURYSMS
*A. Kazakidi, F. Drakopoulos, C. Sadasivan, **N. Chrisochoides**, J. Ekaterinaris, B. B. Lieber*

9205 TECHNIQUES TO INTEGRATE PATIENT-SPECIFIC SIMULATION OF ANEURYSMAL BLOOD FLOW INTO THE CLINICAL WORKFLOW
***Gábor Závodszky**, Roland Joó-Kovács, György Paál, István Szikora*

8338 OPTIMAL INTERVAL OF TWO STRUT WIRES RELATIVE TO ANEURYSM INFLOW
***Hitomi Anzai**, Kazuhiro Watanabe, Makoto Ohta*

8683 DISTRIBUTION OF ENDOTHELIAL CELLS DOWNSTREAM OF A STENT STRUT: AN IN-VITRO STUDY
***Makoto Ohta**, Tomohito Watanabe, Xiaobo Han, Hisatoshi Kobayashi, Hitomi Anzai*

8694 DEVELOPMENT OF IN-VITRO MODEL FOR EVALUATION OF ENDOLEAK AND MIGRATION ON STENT GRAFT
***Taihei Onishi**, Yujie Li, Shunsaku Oppata, Tadashi Idei, Makoto Ohta*

9438 THE ROLE OF BIOMECHANICAL FORCES IN INTRACRANIAL ANEURYSM GROWTH AND RUPTURE
*Mannekomba Roxane Diagbouga, Sandrine Morel, Vincent Braunersreuther,Esther Sutter, Marie-Luce Bochaton-Piallat, **Philippe Bijlenga**, Brenda R. Kwak*

Wednesday, June 8 **Danae**
17:15-19:15

MS 923 - 3: NOVEL DISCRETIZATION METHODS – MATHEMATICAL AND MECHANICAL ASPECTS

MS Organizers: Jörg Schröder, Peter Wriggers, Ferdinando Auricchio, Carsten Carstensen

Chair: Jörg Schröder

8092 A NOVEL HIGH-PERFORMANCE MIXED MEMBRANE FINITE ELEMENT FOR THE ANALYSIS OF ELASTOPLASTIC STRUCTURES
***Nicola Antonio Nodargi**, Paolo Bisegna*

7619 DISCONTINUOUS GALERKIN METHOD WITH REDUCED INTEGRATION SCHEME FOR THE BOUNDARY TERMS IN ALMOST INCOMPRESSIBLE LINEAR ELASTICITY
***Hamid Reza Bayat**, Stephan Wulfinghoff, Stefanie Reese*

6876 REMARKS ON THE HELLINGER-REISSNER FINITE ELEMENT FORMULATIONS FOR ELASTO-PLASTICITY AT SMALL STRAINS
***Maximilian Igelbüscher**, Jörg Schröder, Alexander Schwarz*

9079 MULTI-LEVEL HP-FEM: DYNAMIC DISCRETIZATIONS WITH ARBITRARY HANGING NODES FOR SOLID MECHANICS
***Nils Zander**, Davide D'Angella, Tino Bog, Stefan Kollmannsberger, Martin Ruess, Ernst Rank*

9973 ISOGEOMETRIC COLLOCATION FOR RATE-INDEPENDENT PLASTICITY
***Frederik Fahrendorf**, Laura De Lorenzis, Thomas J.R. Hughes*

Wednesday, June 8 **Europa**
17:15-19:15

CS 630 - 1: SIMULATION OF FLUID-STRUCTURE INTERACTION

Chair: Joris Degroote

8622 QUASI-NEWTON TECHNIQUES FOR THE PARTITIONED SOLUTION OF COUPLED PROBLEMS
***Joris Degroote**, Robby Haelterman, Jan Vierendeels*

8788 NUMERICAL SIMULATION OF FLUID-STRUCTURE INTERACTION PROBLEMS BY A COUPLED SPH-FEM APPROACH
***Jessica Stasch**, Bircan Avci, Peter Wriggers*

8826 MODELING OF SUBMERGED CABLES USING FLEXIBLE MULTIBODY DYNAMICS
***Alexander Held**, Robert Seifried*

10824 EFFECT OF DISC GEOMETRY ON THE DYNAMIC STABILITY OF A DIRECT SPRING OPERATED PRESSURE RELIEF VALVE
***István Erdődi**, Csaba Hős*

5923 INVESTIGATION OF THE FLOW OVER AN OSCILLATING CYLINDER WITH A VERY LARGE EDDY SIMULATION MODEL
***Anastasia Kondratyuk**, Michael Schäfer, Awais Ali*

Wednesday, June 8 **Leda**
17:15-19:15

MS 1001 - 7: STRUCTURAL AND MULTIDISCIPLINARY OPTIMIZATION

MS Organizers: J.F. Aguilar Madeira, Helder C. Rodrigues

Chair: Filippo Menghini

5874 OPTIMAL REINFORCEMENT OF MEMBRANE SHELLS
***Anders Klarbring**, Bo Torstenfelt, Peter Hansbo, Mats G Larson*

10062 A MIXED-INTEGER LINEAR PROGRAMMING APPROACH FOR GLOBAL DISCRETE SIZE OPTIMIZATION OF FRAME STRUCTURES
***Roxane Van Mellaert**, Kristo Mela, Teemu Tiainen, Markku Heinisuo, Geert Lombaert, Mattias Schevenels*

7623 MULTIDISCIPLINARY OPTIMIZATION BY SURROGATE MODELS: HANDLING EPISTEMIC UNCERTAINTIES BY POLYNOMIAL CHAOS EXPANSION
***Sylvain Dubreuil**, Nathalie Bartoli, Christian Gogu, Thierry Lefebvre*

8564 MINIMUM-COST TOPOLOGY AND SIZING OPTIMIZATION OF NONLINEAR VISCOUS DAMPERS FOR SEISMIC RETROFITTING OF 3-D FRAME STRUCTURES
***Nicolo Pollini**, Oren Lavan, Oded Amir*

5835 ON A NASH GAME FOR TOPOLOGY OPTIMIZATION UNDER LOAD-UNCERTAINTY – FINDING THE WORST LOAD
Carl-Johan Thore

Wednesday, June 8 **Athena**
17:15-19:35

MS 1102: VERIFICATION OF REDUCED MODELS IN COMPUTATIONAL MECHANICS

MS Organizers: Ludovic Chamoin, Pedro Diez, Fredrik Larsson, Kris Van der Zee

Chair: Ludovic Chamoin

6217 CERTIFIED MULTISCALE COMPUTATIONS BASED ON MSFEM AND PGD MODEL REDUCTION
***Ludovic Chamoin**, Frédéric Legoll*

10074 ERROR CONTROLLED REDUCED ORDER MODELING IN COMPUTATIONAL HOMOGENIZATION OF FLUID-SATURATED POROUS MEDIA
***Fredrik Larsson**, Ralf Jänicke, Kenneth Runesson*

8843 A POSTERIORI ERROR ESTIMATION FOR MULTISCALE COMPUTATIONS BASED ON MSFEM
Frederic Legoll

11200 ON THE CONTROL OF PGD REDUCED-ORDER APPROXIMATIONS: ERROR ESTIMATION AND ADAPTIVITY
***Florent Pled**, Ludovic Chamoin, Pierre-Eric Allier, Pierre Ladevèze*

9195 RELIABILITY AND COMPUTATIONAL EFFICIENCY IN REDUCED BASIS METHODS FOR COMPLEX NONAFFINE AND NONLINEAR PDES
***Andrea Manzoni**, Federico Negri*

9904 A PGD SOLVER FOR THE PARAMETRIC POWER FLOW PROBLEM: MODELING ELECTRIC GRIDS WITH ACCURACY ASSESSMENT AND CONTROL
***Raquel García-Blanco**, Pedro Díez, Domenico Borzacchiello, Francisco Chinesta*

11283 RESIDUAL-BASED VERIFICATION OF PGD REDUCED MODELS
***Kenan Kergrene**, Serge Prudhomme, Igor Mozolevski*

Wednesday, June 8 **Artemis**
17:15-19:15

MS 405: COMPUTATIONAL MODELING OF MULTIPHASE FLOWS: ADVANCED METHODS, INTERFACE PHENOMENA AND ENVIRONMENTAL APPLICATIONS

MS Organizers: Adeline Montlaur, Santiago Arias Calderón, Martin Kronbichler

Chair: Martin Kronbichler

12203 A 3D CFD NUMERICAL STUDY OF THE BUBBLE GENERATION PROCESS INTO A BUBBLE T-JUNCTION GENERATOR AND ITS COMPARISON WITH EXPERIMENTAL DATA: PART I
*Santiago Arias, **Adeline Montlaur***

5966 A 3D CFD NUMERICAL STUDY OF THE BUBBLE GENERATION PROCESS INTO A BUBBLE T-JUNCTION GENERATOR AND ITS COMPARISON WITH EXPERIMENTAL DATA: PART II
***Santiago Arias Calderón**, Adeline Montlaur*

7296 ACCURATE MODELING OF MOVING CONTACT LINE IN TWO-PHASE IMMISCIBLE FLOWS
***Hanna Holmgren**, Gunilla Kreiss*

5704 ON THE SIMULATION OF PHASE TRANSITION FLOWS USING THE NAVIER-STOKES KORTEWEG EQUATIONS ON UNSTRUCTURED GRIDS
***Luis Ramirez**, Xesus Nogueira, Takfarinas Ait-Ali, Sofiane Khelladi, Pablo Ouro, Ignasi Colominas*

8165 A MULTIPHASE MODEL FOR THE NUMERICAL SIMULATION OF ICE-FORMATION IN SEA-WATER
***Vanessa Covello**, Antonella Abbà, Luca Bonaventura, Alessandro Della Rocca, Lorenzo Valdettaro*

8629 MODELLING MULTIPHASE AND COMPOSITIONAL FLOWS IN POROUS MEDIA USING A PARAMETRISED PR-EOS
***Konstantinos Christou**, Francisco B.S. Oliveira, Jefferson L.M.A. Gomes*

Wednesday, June 8 **Aphrodite**
17:15-19:15

MS 103 - 3: MECHANICS OF BIOLOGICAL TISSUES

MS Organizers: Markus Böl, Gerhard A. Holzapfel

Chair: Jonas Stålhand

8950 IN VIVO DEFORMATION ANALYSIS OF AORTIC WALLS BY TIME RESOLVED 3D ULTRASOUND
***Christopher Blase**, Andreas Wittek*

10869 IMPLEMENTATION OF AN EXPONENTIAL FIBER DISPERSION MODEL FOR EXCLUDING FIBERS UNDER COMPRESSION
***Kewei Li**, Gerhard Holzapfel*

11367 A 3D ELECTROMECHANICAL FEM-BASED MODEL FOR CARDIAC TISSUE
*Minh Tuan Duong, **Alexander Jung**, Ralf Frotscher, Manfred Staat*

12407 A QUASI-INEXTENSIBLE ELEMENT FORMULATION FOR ANISOTROPIC CONTINUUM
Hüsnü Dal

15038 CONSTITUTIVE MODELING OF ACTIVE ELECTRO-MECHANICS WITH DISTRIBUTED FIBER FOR ANISOTROPIC CARDIAC TISSUE
*Alessio Gizzi, Anna Pandolfi, **Marcello Vasta***

5742 A MICROSTRUCTURAL CONSTITUTIVE MODEL FOR SKELETAL MUSCLE TISSUE
***Leonidas Spyrou**, Kostas Danas*

Wednesday, June 8 **Apollo East**
17:15-19:15

MS 801 - 5: MULTISCALE COMPUTATIONAL HOMOGENIZATION FOR BRIDGING SCALES IN THE MECHANICS AND PHYSICS OF COMPLEX MATERIALS

MS Organizers: Julien Yvonnet, Kenjiro Terada, Peter Wriggers, Marc Geers

Chair: Felix Fritzen

11479 A HOMOGENIZATION TECHNIQUE FOR ELASTO-PLASTIC COMPOSITES
***Federica Covezzi**, Stefano de Miranda, Sonia Marfia, Elio Sacco*

5465 A SEMI-IMPLICIT MICROPLAR DISCRETE-TO-CONTINUUM METHOD FOR GRANULAR MATERIALS
*Kun Wang, **WaiChing Sun***

7726 MODELING OF LOW-ALLOYED TRIP-STEELS BASED ON DIRECT MICRO-MACRO SIMULATIONS
***Stefan Prüger**, Ashutosh Gandhi, Daniel Balzani*

8632 DISCRETE AND CONTINUUM MODELING OF THE EFFECTIVE PERMEABILITY OF MICROCRACKED MATERIALS
***Jithender J. Timothy**, Dirk Leonhart, Günther Meschke*

Wednesday, June 8 **Apollo West**
17:15-19:15

CS 450 - 2: NUMERICAL METHODS AND CONVERGENCE ACCELERATION IN CFD

Chair: Jonathan Bull

5822 A DIRECT SOLVER FOR THE ADVECTION-DIFFUSION EQUATION USING GREEN'S FUNCTIONS AND LOW-RANK APPROXIMATION
***Jonathan Bull**, Stefan Engblom, Sverker Holmgren*

5839 AN IMPROVED DISCRETIZATION METHOD FOR BOUNDED CONVECTIVE SCHEMES ON UNSTRUCTURED CO-LOCATED GRIDS
Vlado Przulj

11423 COMPARISON OF DIFFERENT SPATIAL/ANGULAR AGGLOMERATION MULTIGRID SCHEMES FOR RADIATIVE HEAT TRANSFER COMPUTATIONS
***Georgios Lygidakis**, Ioannis Nikolos*

11677 SOLVING THE STEADY RANS EQUATIONS BY SELECTIVE FREQUENCY DAMPING: APPLICATION TO THE TURBULENT FLOW AROUND AN AIRFOIL AT STALL
***François Richez**, Olivier Marquet*

6066 A LOW-MACH, LOW-REYNOLDS PRECONDITIONING SCHEME WITH PARTICULAR ATTENTION TO VISCOUS TIME-STEPPING
***Jens Fiedler**, Graham Ashcroft*

Wednesday, June 8 **Room 1**
17:15-19:15

MS 1002: EVOLUTIONARY ALGORITHMS AND METAHEURISTICS IN CIVIL ENGINEERING AND CONSTRUCTION MANAGEMENT

MS Organizers: Jorge Magalhaes-Mendes, David Greiner
Chair: Jorge Magalhaes-Mendes, David Greiner

4677 MULTIOBJECTIVE OPTIMIZATION USING GENETIC ALGORITHMS IN TIME-COST CONSTRUCTION PROJECT SCHEDULING PROBLEM
Jorge Magalhães-Mendes

6785 NASH EVOLUTIONARY ALGORITHMS: TESTING PROBLEM SIZE IN RECONSTRUCTION PROBLEMS IN FRAME STRUCTURES
***David Greiner**, Jacques Periaux, Jose M. Emperador, Blas Galvan, Gabriel Winter*

6638 APPLICATION OF GENETIC ALGORITHMS TO STRUTTED SHEET PILE WALL DESIGN OPTIMIZATION
***Mohamed Eid**, Remon Isaac*

8233 OPTIMUM SEISMIC DESIGN OF REINFORCED CONCRETE FRAMES ACCORDING TO EC8 AND MC2010 WITH GENETIC ALGORITHMS
Panagiotis Mergos

10285 CALIBRATION OF THE NUMERICAL MODEL OF A STAND IN DRAGÃO STADIUM BASED ON GENETIC ALGORITHMS
*Jorge Leite, **Diogo Ribeiro**, Hugo Marques, Rui Calçada*

Wednesday, June 8 **Room 2**
17:15-19:15

MS 406: ADVANCES IN COMPUTATIONAL METHODS FOR GAS-LIQUID TWO-PHASE FLOW

MS Organizers: Byeong Rog Shin, Takeo Kajishima
Chair: Bernard Geurts

11055 SECTIONAL EULERIAN MODELING OF AEROSOL DRIFT, DIFFUSION AND DEPOSITION
*Edo Frederix, Arkadiusz Kuczaj, Markus Nordlund, **Bernard Geurts***

8964 AN EMBEDDED-BOUNDARY FINITE-VOLUME METHOD FOR EULER FLOW WITH OCEAN APPLICATIONS
***Curtis Lee**, Hans Johansen, John Dolbow, Dan Graves, Dharshi Devendran*

10716 A METHOD OF CHAINED ANALYTICAL WAVE STRUCTURES FOR LARGE SCALE STRATIFIED TWO-PHASE PIPE FLOWS
Andreas Holm Akselsen

10733 ENHANCEMENT OF EULERIAN-LAGRANGIAN MODEL FOR INVESTIGATION OF INTERACTION PRIMARY JET AND WATER MICROJETS IN A WIDE RANGE OF MACH NUMBERS
*Matvei Kraposhin, Mikhail Kalugin, **Sergei Strijhak***

6903 COUPLING OF FLUID STUCTURE INTRACTION SOLVER WITH A VOF METHOD FOR MULTIPHASE STRUCTURE INTERACTION
***Daniele Cerroni**, Roberto Da Via', Sandro Manservisi, Filippo Menghini*

4409 FREE-SURFACE FLOW SIMULATION OF UNLIKE-DOUBLET IMPINGING JET ATOMIZATION
***Junya Kouwa**, Shinsuke Matsuno, Chihiro Inoue, Takehiro Himeno, Toshinori Watanabe*

Wednesday, June 8 **Room 3**
17:15-19:15

MS 1006: PARAMETER IDENTIFICATION IN SOLID MECHANICS

MS Organizers: A. Gil Andrade-Campos, Marco Rossi, Sandrine Thuillier, Franck Toussaint, Marta C. Oliveira
Chair: A. Gil Andrade-Campos

9504 ON THE DESIGN OF MECHANICAL TESTS FOR PARAMETER IDENTIFICATION OF ELASTO-PLASTIC CONSTITUTIVE MODELS
*Nelson Souto, **António Andrade-Campos**, Sandrine Thuillier*

10447 USING BAYESIAN INFERENCE TO RECOVER THE MATERIAL PARAMETERS OF A HETEROGENEOUS HYPERELASTIC BODY
***Jack S. Hale**, Patrick E. Farrell, Stéphane P. A. Bordas*

6015 AN INVERSE PROBLEM STRATEGY BASED ON FORWARD MODEL EVALUATIONS: GRADIENT-BASED OPTIMIZATION WITHOUT ADJOINT SOLVES
Miguel Aguilo

6942 STOCHASTIC MATERIAL CALIBRATION OF CERAMIC MATERIALS ON A SMALL SCALE – A COMPARISON BETWEEN DIFFERENT APPROACHES
***Vladimir Buljak**, Shwetank Pandey, Igor Balac*

9463 IDENTIFICATION OF MATERIAL PARAMETERS USING INDENTATION TEST AND MANIFOLD LEARNING APPROACH
***Liang Meng**, Piotr Breitkopf, Balaji Raghavanand, Gérard Mauvoisin, Olivier Bartier, Xavier Hernot*

4685 IDENTIFICATION OF THE MECHANICAL PROPERTIES OF COMPOSITE MATERIALS REINFORCED WITH FLAX-FIBRES DURING IMPACT TESTING WITH FINITE ELEMENT MODEL UPDATING AND IMAGE ANALYSIS
*Amélie Cuynet, **Franck Toussaint**, Emile Roux, Daniel Scida, Rezak Ayad*

9066 COHESIVE ZONE MODEL IDENTIFICATION WITH DCB TEST PARAMETER ESTIMATION SENSITIVITY
***Racine Ly**, Julien Jumel, Martin Shanahan, Florian Lavelle*

Wednesday, June 8 **Room 4**
17:15-19:15

MS 408 - 2: MANIPULATION AND CONTROL OF TURBULENT FLOW
MS Organizers: Markus Rütten, Christina Voß
Chair: Markus Rütten, Christina Voß

6549 MANIPULATION AND CONTROL OF TURBULENT FLOW
***Christina Voß**, Markus Rütten*

7060 A FRAMEWORK FOR SIMULTANEOUS OPTIMIZATION OF CHAOTIC AND TURBULENT FLOWS
***Stefanie Günther**, Nicolas Gauger, Qiqi Wang*

4628 MODELING OF EXCITATION OF CONTROLLING DISTURBANCES IN SWEPT WING BOUNDARY LAYER BY MEANS OF PLASMA ACTUATORS
*Sergey Chernyshev, Andrey Kiselev, **Aleksandr Kuryachii***

10690 NUMERICAL SIMULATION OF INTERACTION PROCESS BETWEEN DIELECTRIC BARRIER DISCHARGE AND DUCT FLOW
***Pavel Semenev**, Dmitriy Pudovikov, Pavel Toktaliev*

10988 IMPLEMENTATION OF POD AND DMD METHODS IN APACHE SPARK FRAMEWORK FOR SIMULATION OF UNSTEADY TURBULENT FLOW IN THE MODEL COMBUSTOR
***Mikhail Kalugin**, Sergei Strijhak*

7306 DOLPHIN-INSPIRED DRAG REDUCTION FOR SHIPS
***Lars-Uve Schrader**, Jochen Marzi, Amir Banari, Christian F. Janßen, Thomas Rung*

Wednesday, June 8 **Room 5**
17:15-19:15

CS 410 - 6: COMPUTATIONAL FLUID MECHANICS
Chair: Julien Bruchon

5971 A NEW VARIATIONAL FORMULATION OF THE TRIPLE JUNCTION EQUILIBRIUM
***Julien Bruchon**, Nicolas Moulin, Yujie Liu*

11856 EXTENSION OF IMMERSED BOUNARY METHODS TO STRETCHED RECTILINEAR GRIDS.
***Joris Picot**, Stéphane Glockner, Thomas Milcent, Delphine Lacanette*

7539 A KRYLOV-BASED EXPONENTIAL TIME INTEGRATOR OF THE INCOMPRESSIBLE NAVIER-STOKES EQUATION
***Gijs Kooij**, Mike Botchev, Bernard Geurts*

8780 IMMERSED BOUNDARY METHODS FOR COMPRESSIBLE LAMINAR FLOWS
***Rakesh Ramakrishnan**, Anant Girdhar, Santanu Ghosh*

9478 AIR OUTLET DESIGN FOR A PASSIVELY DRIVEN HYBRID LAMINAR FLOW CONTROL SYSTEM
***Udo Krause**, Peter Kreuzer, Hubert Stuke*

Wednesday, June 8 **Room 7**
17:15-19:15

CS 720 - 2: COMPUTATIONAL MATERIALS SCIENCE
Chair: Evgeny Barkanov

5953 NUMERICAL SIMULATION OF ADVANCED PULTRUSION PROCESSES WITH MICROWAVE HEATING
***Evgeny Barkanov**, Pavel Akishin, Rudolf Emmerich, Matthias Graf*

10182 EFFICIENT NUMERICAL SIMULATION OF INDUSTRIAL SHEET METAL BENDING PROCESSES
***Christian Zehetner**, Paula Reimer, Franz Hammelmüller, Hans Irschik, Wolfgang Kunze*

9099 CRYSTAL VISCOPLASTICITY AND PLASTIC ANISOTROPY OF AL-RICH TIAL SX AT 1050°C
***Helal Chowdhury**, Konstantin Naumenko, Holm Altenbach, Manja Krüger*

10782 A NOVEL TOOL FOR CONVERTING THE VOXEL REPRESENTATION OF MICROSTRUCTURES TO SMOOTH TETRAHEDRAL MESHES
Carl Sandström

11094 A PARTICLE-BASED MODEL TO INVESTIGATE THE MECHANICS OF SOFT FIBRE NETWORK
*Md Shakhawath Hossain, Per Bergström, **Tetsu Uesaka***

10183 NUMERICAL MODELLING AND SIMULATION OF SHEET METAL CUTTING PROCESSES
***Paula Reimer**, Christian Zehetner, Franz Hammelmüller, Wolfgang Kunze*

4708 THE INFLUENCE OF THERMAL BARRIERS IN ANISOTROPIC MEDIA APPLIED TO PCB USING MEC
***N.C. Anunciação Jr,** T.S.L. Oliveira, C.T.M Anflor*

Wednesday, June 8 **Room 8**
17:15-19:15

MS 1201 - 2: COMPUTATIONAL STRUCTURAL DYNAMICS
MS Organizers: Evangelos J. Sapountzakis, Andreas E. Kampitsis
Chair: Evangelos J. Sapountzakis

6772 DYNAMIC RESPONSE OF REAL OFFSHORE WIND TURBINES ON MONOPILES IN STRATIFIED SEABED
***Guillermo M. Álamo**, Juan J. Aznárez, Luis A. Padrón, Alejandro E. Martínez-Castro, Rafael Gallego, Orlando Maeso*

9090 NONLINEAR DYNAMICS OF A TIME DELAYED COUPLING DUFFING OSCILLATORS
***Andrzej Weremczuk**, Rafal Rusinek, Jerzy Warminski*

9910 INVARIANCE OF EIGENFREQUENCIES AND EIGENMODES UNDER GEOMETRIC TRANSFORMATION IN ELONGATED ELASTIC STRUCTURES
***Maryam Morvaridi**, Michele Brun*

10008 AN EFFICIENT MODELING TECHNIQUE FOR DYNAMIC ANALYSIS OF BOX GIRDER BRIDGE SUPERSTRUCTURES BASED ON A RIGOROUS CROSS-SECTIONAL ANALYSIS
***Kiana Kashefi**, Abdul Hamid Sheikh*

9209 NUMERICAL ROUTINE FOR DYNAMIC ANALYSIS OF TRANSMISSION LINES GUYED TOWERS SUBMITTED TO BROKEN CABLE
***Thiago Brazeiro Carlos**, João Kaminski Jr.*

7734 STRUCTURED SPATIAL DISCRETIZATION OF DYNAMICAL SYSTEMS
***Marko Jokic**, Andrej Jokic, Bruno Dogancic*

Wednesday, June 8 **Room 9**
17:15-19:15

MS 203: COMPUTATIONAL METHODS FOR MODELLING INSTABILITIES IN SOLIDS & STRUCTURES

MS Organizers: Spyros A. Karamanos
Chair: Spyros A. Karamanos

12018 **KEYNOTE:** EFFICIENCY OF DAMAGE-PLASTICITY MODELS IN CAPTURING COMPACTION-EXPANSION TRANSITION OF CONCRETE UNDER DIFFERENT COMPRESSION LOADING CONDITIONS
Reza Mousavi, Masoud D. Champiri, ***Kaspar J Willam***

11295 **KEYNOTE:** NON-ASSOCIATIVE J2 PLASTICITY MODEL FOR FINITE ELEMENT BUCKLING ANALYSIS OF THICK-WALLED METAL SHELLS
Spyros A. Karamanos*, Patricia Pappa*

10362 ON STABILITY LOSS OF A THIN-WALLED SPHERICAL SHELL SUBJECTED TO EXTERNAL PRESSURE AND INTERNAL HOMOGENEOUS CORROSION
Emmanuel Gutman*, Rudolf Bergman, Semyon Levitski*

7803 APPLICATION OF THICK LEVEL-SET METHOD TO DYNAMIC FRAGMENTATION OF BRITTLE MEDIA
Andrew Stershic*, John Dolbow, Nicolas Moës*

Wednesday, June 8 **Room 10**
17:15-19:15

MS 414 - 2: NEW TRENDS IN NUMERICAL METHODS FOR MULTI-MATERIAL COMPRESSIBLE FLUID FLOWS

MS Organizers: Andy Barlow, Michael Dumbser, Raphaël Loubère, Pierre-Henri Maire, Rob Rieben, Mikhail Shashkov, François Vilar
Chair: Pierre-Henri Maire

6435 POROELASTICITY: FLEXIBLE HIGH-ORDER VARIATIONAL SPACE-TIME DISCRETISATIONS
Uwe Köcher*, Markus Bause*

10639 ISOTROPY–PRESERVING SLOPE LIMITERS FOR FINITE VOLUME METHODS ON SQUARE MESHES
Jan Velechovsky*, Marianne Francois*

6287 EULERIAN CALCULATIONS OF MULTIMATERIAL FLOWS WITH SUB-CELL RECONSTRUCTION OF INTERFACES.
Igor Menshov*, Pavel Zakharov*

7567 A CONSERVATIVE SLIDE LINE METHOD FOR CELL-CENTERED SEMI-LAGRANGIAN AND ALE SCHEMES IN 2D
Silvia Bertoluzza, ***Stéphane Del Pino****, Emmanuel Labourasse*

8851 LAGRANGE-FLUX EULERIAN SCHEMES FOR COMPRESSIBLE MULTIMATERIAL FLOWS
Florian De Vuyst*, Thibault Gasc, Renaud Motte, Mathieu Peybernes, Raphael Poncet*

9959 A CARTESIAN SCHEME FOR COMPRESSIBLE MULTIMATERIAL MODELS WITH PLASTICITY
Thomas Milcent*, Angelo Iollo, Alexia de Brauer*

Wednesday, June 8 **Room 11**
17:15-19:35

MS 410 - 3: COMPLEX FLUID FLOWS IN ENGINEERING: MODELLING, SIMULATION AND OPTIMIZATION

MS Organizers: Stefanie Elgeti, Philipp Knechtges
Chair: Philipp Knechtges

4504 TALKING DROPS: OSCILLATING MARANGONI CONVECTION ENABLES INFORMATION PROPAGATION BETWEEN NANO-DROPS
Sebastian Aland

5044 NUMERICAL ANALYSIS OF RAREFIED GAS FLOWS USING THE ACADEMIC CFD CODE GALATEA
Angelos Klothakis*, Georgios Lygidakis, Ioannis Nikolos*

6582 NUMERICAL SIMULATION OF THE CONJUGATE HEAT TRANSFER IN THE COOLING SYSTEM OF THE COMBUSTION CHAMBERS OF THE AVIATION RAMJET ON THE ENDOTHERMIC FUELS
Vadim Volokhov, Sergei Martynenko, ***Pavel Toktaliev***

6620 COMBINING COMPUTATIONAL FLUID DYNAMICS AND DIMENSIONAL ANALYSIS IN THE DESIGN OF OIL SKIMMER TANKS
Axel Larreteguy*, Francisco Barceló, Pablo Caron*

8700 NEAR WALL BEHAVIOR OF IMPLICIT LARGE EDDY SIMULATIONS
Ioannis Kokkinakis*, Dimitris Drikakis*

9282 MOLD FILLING SIMULATIONS HELP IMPROVE THE MANUFACTURING PROCESS FOR CFRP COMPONENTS
Dino Magagnato

8961 A PARALLEL MULTIGRID SOLVER FOR TIME PERIODIC INCOMPRESSIBLE NAVIER-STOKES EQUATIONS
Pietro Benedusi*, Rolf Krause, Peter Arbenz, Daniel Hupp*

Wednesday, June 8 **Room 12**
17:15-19:15

MS 1003 - 2: ADVANCES IN DESIGN OPTIMIZATION OF STRUCTURES AND MATERIALS

MS Organizers: Zhen Luo, Zhan Kang
Chair: Qi Xia, Xiaopeng Zhang

9472 ECOCEMENT: A NOVEL COMPOSITE MATERIAL FOR THE CONSTRUCTION INDUSTRY. IDENTIFICATION OF AN OPTIMAL RECIPE USING NEURAL NETWORKS
Natia Anastasi, ***Nikolaos Bakas****, Piero Tiano, Jay Stuart, Linda Wittig, Javier Royo, Laura Sanchez, Oana Cuzman, Katharina Richter*

8087 TOPOLOGY OPTIMIZATION OF PERIODIC STRUCTURES FOR COUPLED ACOUSTIC-STRUCTURE SYSTEMS
William Vicente*, Renato Picelli, Renato Pavanello, Mike Xie*

7294 APPROXIMATION OF GRADIENTS IN TOPOLOGY OPTIMIZATION OF FLEXIBLE MULTIBODY SYSTEMS
Ali Moghadasi*, Alexander Held, Robert Seifried*

5372 ROBUST STRUCTURAL DESIGN FOR UNKNOWN LOADINGS WITH FREE-FORM OPTIMIZATION METHOD
Masatoshi Shimoda*, Tomohiro Ngano*

8831 BESO APPROACH TO TOPOLOGY OPTIMIZATION OF GAN PHONONIC CRYSTALS
Luca D'Alessandro*, Bichoy Bahr, Luca Daniel, Dana Weinstein, Raffaele Ardito*

Wednesday, June 8 **Room 18**
17:15-19:15

MS 804 - 1: MULTISCALE AND COMPUTATIONAL APPROACHES TO FRACTURE AND FAILURE

MS Organizers: Haim Waisman, Caglar Oskay
Chair: Caglar Oskay

7732 **KEYNOTE:** INTERACTIONS OF DAMAGE MECHANISMS IN COMPOSITES SUBJECTED TO FATIGUE – LESSONS LEARNED FROM A BLIND PREDICTION STUDY
Michael Bogdanor, ***Caglar Oskay****, Stephen Clay*

4676 **KEYNOTE:** PHASE FIELD MODELING OF COMPLEX MATRIX/INTERFACIAL CRACK PROPAGATION IN COMPLEX MICROSTRUCTURES OBTAINED FROM MICROTOMOGRAPHY IMAGES
Julien Yvonnet*, Thanh Tung Nguyen, Michel Bornert, Camille Chateau, Qizhi Zhu*

10119 A SIMPLE LINEAR TETRAHEDRAL FINITE ELEMENT FOR INCOMPRESSIBLE SOLID DYNAMICS: THE ALGORITHM AND ITS BENEFITS IN FAILURE MECHANICS
Guglielmo Scovazzi*, Xianyi Zeng, Simone Rossi, Brian Carnes*

Wednesday, June 8 **Room 18**
17:15-19:15

MS 1007 - 4: ADDITIVE MANUFACTURING AND OPTIMIZATION

MS Organizers: Ekkehard Ramm, Ole Sigmund, Pierre Duysinx, Wing Kam Liu
Chair: Oded Amir, Matthijs Langelaar

8473 DESIGNING MANUFACTURABLE VISCOELASTIC DEVICES USING A TOPOLOGY OPTIMIZAZTION APPROACH WITHIN A TRULY-MIEX FEM FRAMEWORK
Paolo Venini, *Marco Pingaro, Carlo Cinquini*

8257 ON A MULTI-MATERIAL OPTIMIZATION METHOD WITH DIRECT GRAYNESS AND LENGTH-SCALE CONTROL
Michael Stingl

8614 ISO-XFEM FOR TOPOLOGY OPTIMIZATION OF STRUCTURES UNDER MULTIPLE LOAD CASES AND ACCELERATION LOADING
Meisam Abdi*, Ian Ashcroft, Ricky Wildman*

6338 ANISOTROPIC MATERIAL ORIENTATION OPTIMIZATION METHOD IN COMPOSITE LAMINATES
Mario Petrovic*, Tsuyoshi Nomura, Takayuki Yamada, Kazuhiro Izui, Shinji Nishiwaki*

7367 OPTIMIZATION OF LATTICE STRUCTURES FOR PHONONIC BAND GAPS
Fabian Wein*, Michael Stingl*

Wednesday, June 8 **Room 20**
17:15-19:15

MS 907 - 3: REGULARIZED ENRICHED APPROXIMATIONS AND QUADRATURE FOR DISCONTINUITIES, SINGULARITIES AND CONTINUOUS-DISCONTINUOUS TRANSITION

MS Organizers: Elena Benvenuti, Giulio Ventura, José M.A. César de Sá
Chair: José M.A. César de Sá

6486 **KEYNOTE:** THE EFFECT OF QUADRATURE ON HIGH ORDER FICTITIOUS DOMAIN METHODS
Silvia Bertoluzza*, Vincent Chabannes, Mourad Ismail, Christophe Prud'homme*

10521 EFFECTIVE 3D REGULARIZED XFEM FOR PULL-OUT OF STEEL BARS IN CONCRETE, BENDING AND SHEAR TESTS ON FRP-REINFORCED CONCRETE BEAMS
Elena Benvenuti*, Nicola Orlando*

8342 NUMERICAL ISSUES OF ENRICHED FEM WITH QUADRATIC ELEMENTS
Marcel Ndeffo*, Patrick Massin*

4909 A NONCONFORMING HIGH-ORDER METHOD ON POLYTOPAL MESHES FOR THE BIOT PROBLEM
Daniele Boffi, ***Michele Botti****, Daniele Antonio Di Pietro*

Wednesday, June 8 **Room 21**
17:15-19:15

MS 110: COMPUTATIONAL BONE MECHANICS

MS Organizers: Bernd Markert, Udo Nackenhorst, Martin Ruess
Chair: Martin Ruess

6479 TOWARDS AN INTEGRATED COMPUTATIONAL FRAMEWORK ON BONE IMPLANT SURGERY
Udo Nackenhorst*, Gabriela von Lewinski*

8215 MICROMECHANICAL STIFFNESS ESTIMATION OF TISSUE ENGINEERING SCAFFOLDS COMPOSED OF HYDROXYAPATITE GRANULES, CONSIDERING BONE REGENERATION
Stefan Scheiner*, Vladimir Komlev, Alexey Gurin, Christian Hellmich*

11304 COUPLING THE FINITE CELL METHOD WITH FEATURE EXTRACTION AND DIFFUSE INTERFACES FOR FULLY AUTOMATED STRESS ANALYSIS OF CT BASED BONE STRUCTURES
Stein Stoter, Lam H. Nguyen, ***Martin Ruess****, Dominik Schillinger*

8814 COMPUTATIONAL MODELING OF A PROXIMAL FEMUR: A BENCHMARK TEST BETWEEN FINITE-ELEMENT ANALYSIS AND FLEXIBLE MULTIBODY SIMULATION
Andreas Geier*, Märuan Kebbach, Ehsan Soodmand, Daniel Klüß, Evelyn Winter, Anne-Marie Neumann, Andreas Wree, Christoph Woernle, Rainer Bader*

9870 BIOMECHANICAL SUBJECT—SPECIFIC SIMULATIONS OF A FRACTURED TIBIA TREATED WITH AN INTRAMEDULLARY NAIL
Michael Roland*, Thorsten Tjardes, Bertil Bouillon, Stefan Diebels*

16485 MODELING MECHANICAL BEHAVIOR OF TRABECULAR BONE
S. Burhanettin Altan, *Aysegül Tepe*

Wednesday, June 8 **Room 23**
17:15-19:15

MS 1009 - 4: ADJOINT METHODS FOR STEADY & UNSTEADY OPTIMIZATION

MS Organizers: Kyriakos C. Giannakoglou, Jens Dominik Mueller
Chair: Thomas Rung

10628 SHAPE OPTIMIZATION FOR THE REDUCTION OF FLOW-INDUCED NOISE
Nikolaos Magoulas*, Michael Hartmann*

10909 DISCRETE ADJOINT OPENFOAM BASED SENSITIVITY ANALYSIS FOR AERODYNAMIC OPTIMIZATION
Arindam Sen*, Markus Towara, Uwe Naumann*

10976 DEVELOPMENT OF A DISCRETE ADJOINT CFD CODE USING ALGORITHMIC DIFFERENTIATION
Sheikh Razibul Islam*, Johannes Lotz, Jacek Szumbarski*

11245 ON THE DIFFERENTIATION OF SIMPLE ALGORITHM IN ONE-SHOT METHODS FOR OPTIMAL DESIGN
***Siamak Akbarzadeh**, Jens Dominik Müller*

11355 REDUCING THE MEMORY FOOTPRINT OF UNSTEADY ADJOINT CFD THROUGH CHECKPOINTING WITH TEMPORAL AND SPATIAL COARSENING
***Jan Hueckelheim**, Jens-Dominik Mueller*

11651 CAD-FREE VS CAD-BASED PARAMETRISATION METHOD IN ADJOINT BASED AERODYNAMIC SHAPE OPTIMIZATION
***Rejish Jesudasan**, Xingchen Zhang, Mateusz Gugala, Jens-Dominik Mueller*

TECHNICAL SESSIONS

Thursday, June 9 **Zeus East**
8:30-10:30

MS 403 - 2: PARTICLE-BASED METHODS IN FLUID MECHANICS

MS Organizers: Sergio Idelsohn, Eugenio Oñate
Chair: Eugenio Oñate, Sergio Idelsohn

7927 **KEYNOTE:** A LAGRANGIAN PFEM APPROACH TO THE NUMERICAL SIMULATION OF 3D LARGE SCALE LANDSLIDES IMPINGING IN WATER RESERVOIRS
Massimiliano Cremonesi, Francesco Ferri, ***Umberto Perego***

7552 A LAGRANGIAN FINITE ELEMENT METHOD FOR THE SIMULATION OF 3D COMPRESSIBLE FLOWS
Massimiliano Cremonesi*, Attilio Frangi*

9037 PFEM-2 : THE MOST EFFICIENT WAY TO SOLVE CONVECTION-DOMINATED PROBLEMS
Pablo Agustín Becker*, Sergio R. Idelsohn, Eugenio Oñate*

12896 SPH SIMULATION OF MULTIPHASE FLOW
Bo Ren, ***Chenfeng Li****, Javier Bonet, Shimin Hu*

6223 TWO NOVEL WAYS TO IMPOSE FREE-SLIP BOUNDARY CONDITIONS IN FLUID-STRUCTURE INTERACTION PROBLEMS USING THE PARTICLE FINITE ELEMENT METHOD
Marco Lucio Cerquaglia*, Geoffrey Deliége, Romain Boman, Jean-Philippe Ponthot*

Thursday, June 9 **Zeus North**
8:30-10:30

MS 901 - 6: ISOGEOMETRIC METHODS

MS Organizers: Yuri Bazilevs, David J. Benson, Rene De Borst, Thomas J.R. Hughes, Trond Kvamsdal, Alessandro Reali, Giancarlo Sangalli, Clemens V. Verhoosel
Chair: Thomas Elguedj

7720 **KEYNOTE:** AN INTERFACE-BASED TESSELLATION PROCEDURE FOR THE NUMERICAL INTEGRATION OF TRIMMED ELEMENTS IN THE ISOGEOMETRIC FINITE CELL METHOD
Clemens Verhoosel*, Gertjan van Zwieten*

7615 NURBS BASED GALERKIN APPROACH FOR THE ANALYSIS OF BOUNDARY REPRESENTED SOLIDS
Sven Klinkel*, Lin Chen*

7872 DIRECT INTERACTIVE VISUALIZATION OF LR- AND T-SPLINE VOLUMES FOR USE IN LARGE-SCALE SCIENTIFIC COMPUTING AND ISOGEOMETRIC ANALYSIS
Franz Georg Fuchs*, Jon Mikkelsen Hjelmervik*

6946 OPTIMAL QUADRATURE RULES FOR EXACT INTEGRATION IN ISOGOMETRIC ANALYSIS
Kjetil Andre Johannessen

9137 ISOGEOMETRIC MODELING OF RED BLOOD CELLS
Luca Dede'*, Andrea Bartezzaghi, Alfio Quarteroni*

Thursday, June 9 **Zeus West**
8:30-10:30

MS 1007 - 5: ADDITIVE MANUFACTURING AND OPTIMIZATION

MS Organizers: Ekkehard Ramm, Ole Sigmund, Pierre Duysinx, Wing Kam Liu
Chair: Wing Kam Liu, Paolo Venini

5118 SHAPE AND TOPOLOGY OPTIMIZATION ACCOUNTING FOR ADDITIVE MANUFACTURING CONSTRAINTS: INFLUENCE OF INDUCED ANISOTROPY
Alexis Faure, Charles Dapogny, Georgios Michailidis, ***Rafael Estevez****, Guillaume Parry, Natasha Vermaak*

15032 METHOD AND APPLICATION OF CONTINUUM TOPOLOGY OPTIMIZATION OF THERMO-ELASTIC STRUCTURES
Tong Gao*, Lei Tang, Libin Qiu, Lu Zhou, Yingbin He, Weihong Zhang*

7766 FINITE ELEMENT APPROXIMATION OF A TIME-DEPENDENT TOPOLOGY OPTIMIZATION PROBLEM
Matteo Bruggi, ***Nicola Parolini****, Francesco Regazzoni, Marco Verani*

6484 TOPOLOGY OPTIMIZATION FOR ADDITIVE MANUFACTURING USING SELF-SUPPORTING RHOMBIC STRUCTURES
Jun Wu*, Charlie C. L. Wang, Xiaoting Zhang, Rüdiger Westermann*

9130 SUPPORT STRUCTURE CONSTRAINED TOPOLOGY OPTIMIZATION FOR ADDITIVE MANUFACTURING
Amir M. Mirzendehdel, ***Krishnan Suresh***

Thursday, June 9 **Minos East**
8:30-10:30

MS 602 - 2: INNOVATIVE METHODS FOR FLUID-STRUCTURE-INTERACTION

MS Organizers: E. Harald van Brummelen, Roger Ohayon, Trond Kvamsdal
Chair: E. Harald van Brummelen

5325 INFLUENCE OF TURBULENCE MODELING APPROACHES IN THE CONTEXT OF FLUID-STRUCTURE INTERACTION PREDICTIONS
Michael Schäfer

6595 UNIFIED FORMULATION FOR THERMO-COUPLED FSI PROBLEMS USING THE PFEM. APPLICATION TO PHASE CHANGE PROBLEMS
Eugenio Oñate, ***Alessandro Franci****, Josep Maria Carbonell*

6597 ASSESSMENT OF THE FLUID-STRUCTURE INTERACTION CAPABILITIES FOR AERONAUTICAL APPLICATIONS OF THE OPEN-SOURCE SOLVER SU2.
Ruben Sanchez*, Heather L. Kline, David Thomas, Anil Variyar, Marcello Righi, Thomas D. Economon, Juan J. Alonso, Rafael Palacios, Grigorios Dimitriadis, Vincent Terrapon*

11836 A NEW FINITE-ELEMENT FRAMEWORK FOR FLUID-STRUCTURE-INTERACTIONS CONSIDERING FLEXIBLE MEMBRANES: THEORY AND APPLICATION
Tobias Luginsland*, Roger A. Sauer*

7384 FLUID-STRUCTURE INTERACTION IN A CLUSTER OF CYLINDERS EXPOSED TO AXIAL FLOW: FROM LOW-ORDER MODELS TO FULLY COUPLED CFD-CSM METHODS
Jeroen De Ridder*, Katrien Van Tichelen, Joris Degroote, Jan Vierendeels*

Thursday, June 9 **Minos North**
8:30-10:30

STS 6: DRAG REDUCTION AND FLOW CONTROL TECHNOLOGIES

STS Organizers: Dietrich Knoerzer, Geza Schrauf
Chair: Dietrich Knoerzer

15088 THE NATURAL LAMINAR FLOW FLIGHT TEST OF THE BLADE PROJECT OF CLEANSKY
Paul Phillips

14381 STABILITY, TRANSITION AND CONTROL OF THREE-DIMENSIONAL BOUNDARY-LAYER FLOWS
Ardeshir Hanifi

14384 HYBRID LAMINAR FLOW CONTROL TEST CASES FOR TRANSITION AND DRAG PREDICTION
Geza Schrauf

14388 INTEGRATED DESIGN METHOD FOR AIRCRAFT WITH HYBRID LAMINAR FLOW CONTROL WINGS
***Kristof Risse**, Eike Stumpf*

Thursday, June 9 **Minos South**
8:30-10:30

MS 112 - 6: ANEURYSMS: SOLID MECHANICS, FLUID MECHANICS, AND MECHANOBIOLOGY

MS Organizers: Christian J. Cyron, Sven Hirsch, Philippe Bijlenga, Roland C. Aydin, Anne M. Robertson, Gerhard A. Holzapfel
Chair: Christian J. Cyron, Philippe Bijlenga

8063 **KEYNOTE:** ON-GOING RESEARCHES FOR NEW PERSONALIZED RISK OF RUPTURE FOR ASCENDING THORACIC ANEURYSMS
***Olfa Trabelsi**, Ambroise Duprey, Stéphane Avril*

5944 IDENTIFICATION OF ANEURYSM PROGRESSION BASED ON SURFACE SIMILARITY
***Michael Gee**, Sebastian Kehl*

9112 SHAPE-BASED MODELING OF ANEURYSMAL DISEASE STATUS
***Norman Juchler**, Sabine Schilling, Isabel Wanke, Daniel Rüfenacht, Philippe Bijlenga, Vartan Kurtcuoglu, Sven Hirsch*

7807 BIFURCATION CONFIGURATION AS A CRITERION AFFECTING RISK OF ANEURYSM RUPTURE IN BASILAR ARTERY ANEURYSMS
***Sherif Rashad**, Shin-ichiro Sugiyama, Kuniyasu Niizuma, Kenichi Sato, Yasushi Matsumoto, Miki Fujimura, Teiji Tominaga*

8274 CEREBRAL VESSELS AND ANEURYSMS: WHAT CAN WE LEARN FROM PATIENT-SPECIFIC WALL THICKNESS?
***Samuel Voß**, Philipp Berg, Sylvia Glaßer, Thomas Hoffmann, Simon Weigand, Gábor Janiga*

Thursday, June 9 **Europa**
8:30-10:30

CS 630 - 2: SIMULATION OF FLUID-STRUCTURE INTERACTION

Chair: Jan A. Kołodziej

9435 APPLICATION OF THE MFS AND THE SPTF FOR DETERMINATION OF SLIP CONSTANT IN THE BEAVERS-JOSEPH BOUNDARY CONDITION
***Jan A. Kołodziej**, Magdalena Mierzwiczak, Jakub K. Grabski*

6656 COUPLED STOKES-DARCY FLOWS IN ORTHOTROPIC POROUS MEDIUM UNDERGOING FINITE STRAIN
*Maxime Blais, **Nicolas Moulin**, Julien Bruchon, Sylvain Drapier*

6844 A HYBRID FE PROCEDURE FOR SIMULATION OF COUPLED ELECTRICAL, THERMAL, AND MECHANICAL FIELDS IN ELECTRO-THERMALLY DRIVEN MICRO-ACTUATORS
***Walerian Szyszkowski**, Daryl Hill*

11124 HOMOTOPY ANALYSIS METHOD FOR FLUID FLOW THROUGH FIBROUS POROUS MEDIA
Magdalena Mierzwiczak

Thursday, June 9 **Leda**
8:30-10:30

MS 904 - 1: ADVANCED MINIMIMAL RESIDUAL DISCRETIZATION

MS Organizers: Carsten Carstensen, Dietmar Gallistl
Chair: Carsten Carstensen

12123 ADAPTIVE ITERATIVE SOLVERS FOR THE DPG METHOD
***Socratis Petrides**, Leszek Demkowicz*

12134 A DPG APPROACH TO THE NONLINEAR SCHRODINGER EQUATION
***Sriram Nagaraj**, Leszek Demkowicz*

7003 DPG FOR TIME-HARMONIC MAXWELL EQUATIONS
*Carsten Carstensen, **Johannes Storn***

8850 AN ADAPTIVE LEAST-SQUARES FEM FOR THE STOKES EQUATIONS WITH OPTIMAL CONVERGENCE RATES
***Philipp Bringmann**, Carsten Carstensen*

Thursday, June 9 **Athena**
8:30-10:30

MS 1401 - 1: TOICA: THERMAL OVERALL INTEGRATED CONCEPT AIRCRAFT

MS Organizers: Pierre Arbez, Jean-Claude Dunyach
Chair: Jean-Claude Dunyach

9480 THERMAL OVERALL INTEGRATED CONCEPT AIRCRAFT – THE TOICA PROJECT
Pierre Arbez

16673 THE BEHAVIOURAL DIGITAL AIRCRAFT ENVIRONMENT
***Sanjiv Sharma**, Jean-Claude Dunyach*

11179 SUPER INTEGRATION: SEEKING NOVEL VALUED SOLUTIONS
***Sanjiv Sharma**, Christoffer Levandowski, Arturo Molina-Cristobal, Timoleon Kipouros, Ola Isaksson, Trevor Robinson*

9111 VISUAL ANALYTICS FOR EVALUATION OF VALUE IMPACT IN ENGINEERING DESIGN
***Timoleon Kipouros**, Ola Isaksson*

Thursday, June 9 **Artemis**
8:30-10:30

MS 1210: ADVANCES IN MODELING AND ANALYSIS OF FGM STRUCTURES

MS Organizers: Justin Murin, Stephan Kugler, Mehdi Aminbaghai
Chair: Justin Murin

4649 ELASTOSTATIC AND MODAL AND BUCKLING ANALYSIS OF SPATIAL FGM BEAM STRUCTURES
***Justin Murin**, Mehdi Aminbaghai, Juraj Hrabovsky, Vladimir Kutis, Juraj Paulech, Stephan Kugler*

7908 A HIGHER ORDER HYBRID FINITE ELEMENT FOR FGM BEAM STRUCTURES
***Peter Fotiu**, Stephan Kugler*

5592 THERMO-ELASTICITY IN SHELL STRUCTURES MADE OF FUNCTIONALLY GRADED MATERIALS
***Stephan Kugler**, Peter Fotiu, Justin Murin*

6577 NUMERICAL SOLUTION OF DIFFERENTIAL EQUATIONS WITH NON-CONSTANT COEFFICIENTS
***Juraj Hrabovský**, Justín Murín, Mehdi Aminbaghai, Vladimír Kutiš, Juraj Paulech*

6572 FINITE BEAM ELEMENT WITH PIEZOELECTRIC LAYERS AND FUNCTIONALLY GRADED MATERIAL OF CORE
***Vladimír Kutiš**, Justín Murín, Juraj Paulech, Juraj Hrabovský, Roman Gogola, Jakub Jakubec*

7175 TWO-WAY COUPLED ELECTRO-THERMAL ANALYSIS OF FGM SYSTEM CALCULATED BY THE NEW LINK FINITE ELEMENT
***Juraj Paulech**, Vladimír Kutiš, Juraj Hrabovský, Justín Murín, Tibor Sedlár, Roman Gogola, Gabriel Gálik*

Thursday, June 9 **Aphrodite**
8:30-10:30

MS 103 - 4: MECHANICS OF BIOLOGICAL TISSUES
MS Organizers: Markus Böl, Gerhard A. Holzapfel
Chair: Markus Böl

5214 DEVELOPING A MECHANOBIOLOGICAL MODEL OF THE MURINE BLADDER: IN VIVO, IN VITRO AND IN SILICO MODELLING
***Jack Hornsby**, Fangzhou Cheng, Aura Kullman, Hamna Afaq, Megan Duffy, Namrata Gundiah, Lori Birder, Mark Thompson, Paul Watton*

5444 MODELLING THE CHEMO-MECHANO-BIOLOGY OF ARTERIAL GROWTH AND REMODELLING: A 3-DIMENSIONAL, FLUID-SOLID-GROWTH SIMULATION
***Pedro Aparicio**, Namrata Gundiah, Mark S Thompson, Paul N Watton*

6082 SOURCES OF VISCOELASTICITY AND DAMAGE IN SOFT CONNECTIVE TISSUES: MOLECULAR AND INTERMOLECULAR MECHANISMS IN COLLAGEN FIBRILS
***Michele Marino**, René B. Svensson, Giuseppe Vairo, Peter Wriggers*

7448 ON THE ROLE OF FATIGUE IN TENDON: A MULTI-SCALE CONSTITUTIVE MODELLING APPROACH
***Kevin Linka**, Mikhail Itskov*

8863 ON EXPONENTIAL FUNCTION IN THE SOFT TISSUE CONSTITUTIVE LAWS
Ankush Aggarwal

11842 A MICRO-MECHANICALLY BASED MODEL FOR SOFT COLLAGENOUS TISSUES
***Mor B. Frank**, Gerhard A. Holzapfel, Gal deBotton*

Thursday, June 9 **Antigoni**
8:30-10:30

MS 201 - 1: MICROSTRUCTURE-DRIVEN DEFORMATION AND FAILURE IN CRYSTALLINE MATERIALS
MS Organizers: Pilar Ariza, Lucia Nicola, Angelo Simone
Chair: Pilar Ariza

5436 STABILITY OF ASYMMETRIC GRAIN BOUNDARIES IN GRAPHENE
*J.P. Mendez, F. Arca, **M.P. Ariza***

10783 A 3D PHASE-FIELD MODEL FOR DISPLACIVE TRANSITIONS WITH FINITE ELASTOPLASTIC DEFORMATIONS: APPLICATION TO POLYMORPHISM OF IRON AT HIGH PRESSURE:
***Aurélien Vattré**, Christophe Denoual*

11702 MESH OBJECTIVE DAMAGE MODELING OF DUCTILE FRACTURE AT VISCO-PLASTIC CONTINUUM RESPONSE
***Senad Razanica**, Ragnar Larsson, B. Lennart Josefson*

11506 SOURCE DENSITY EFFECT ON INDENTATION PRESSURE RESPONSE OF THIN FILMS: A DISCRETE DISLOCATION PLASTICITY ANALYSIS
***Yilun Xu**, Daniel Balint, Daniele Dini*

5801 CRACK TIP MODELING OF HYDROGEN ASSISTED CRACKING: THE ROLE OF STRAIN GRADIENTS
Emilio Martínez-Pañeda

9301 MOLECULAR DYNAMICS SIMULATIONS OF PHASE TRANSFORMATIONS IN NITI SHAPE MEMORY ALLOY BICRYSTALS
*Prashanth Srinivasan, Lucia Nicola, **Angelo Simone***

Thursday, June 9 **Apollo East**
8:30-10:30

MS 711- 1: FOURIER-BASED METHODS FOR COMPUTING THE BEHAVIOR OF HETEROGENEOUS MATERIALS DEVELOPMENTS, EXTENSIONS AND APPLICATIONS
MS Organizers: Lionel Gélébart, Hervé Moulinec, Franz Roters, François Willot
Chair: Lionel Gélébart, Hervé Moulinec

8762 A MASSIVELY PARALLEL FFT-BASED SOLVER TO EVALUATE STRESS LOCALIZATION IN BCC POLYCRYSTALS
***Lionel Gelebart**, Franck Ouaki, Julien Derouillat*

11858 USING ANDERSON ALGORITHM TO ACCELERATE FFT BASED METHODS
***Étienne Castelier**, Lionel Gélébart, Thomas Helfer*

11062 FOURIER-GALERKIN METHOD BASED ON EXACT INTEGRATION
Jaroslav Vondřejc

5977 NONLINEAR COMPOSITE VOXELS AND FFT-BASED HOMOGENIZATION
***Matthias Kabel**, Andreas Fink, Felix Ospald, Matti Schneider*

8875 COMPARISON OF ALGORITHMS AND SOLUTION METHODS FOR CLASSIC AND PHASE-FIELD-BASED PERIODIC INHOMOGENEOUS ELASTOSTATICS
***Jaber Rezaei Mianroodi**, Pratheek Shanthraj, Bob Svendsen*

7917 NUMERICALLY ROBUST SPECTRAL METHODS FOR CRYSTAL PLASTICITY SIMULATIONS OF HETEROGENEOUS MATERIALS
***Franz Roters**, Pratheek Shanthraj, Martin Diehl, Philip Eisenlohr, Dierk Raabe*

Thursday, June 9 **Apollo West**
8:30-10:30

MS 204 - 1: IMPACT AND CRASH MECHANICS
MS Organizers: Manfred Bischoff, Fabian Duddeck
Chair: Manfred Bischoff, Fabian Duddeck

8778 **KEYNOTE:** OPTIMAL TOPOLOGIES OF EXTRUSION BEAMS UNDER AXIAL AND TRANSVERSAL IMPACT LOADS
Fabian Duddeck

8223 A NONLINEAR REGULARIZATION MODEL FOR CONTACT CONDITIONS AND HIGHER ORDER METHODS FOR IMPACT SIMULATION
***Peter Otto**, Jörg F. Unger, Laura De Lorenzis*

11077 MODELING RESISTANCE SPOT WELD FAILURE IN MARTENSITIC BORON STEELS USING A CRITICAL J-INTEGRAL FRACTURE CRITERION
***Daniel Dorribo**, Pedro Díez, Lars Greve, Irene Arias, Xabier Larráyoz-Izcara*

9968 COMPUTATIONAL MODELLING OF AIRCRAFT DITCHING WITH TWO-WAY FLUID-STRUCTURE-INTERACTION
***Willem Gropengießer**, Thomas Rung*

Thursday, June 9 **Room 1**
8:30-10:30

MS 702: MODELING OF NANOFILLED COMPOSITES
MS Organizers: Konstantinos I. Tserpes
Chair: Konstantinos I. Tserpes

9526 A MULTI-SCALE NUMERICAL MODEL FOR SIMULATING THE LOW-VELOCITY IMPACT RESPONSE OF CARBON NANOTUBE-REINFORCED POLYMERS
*Asimina Manta, **Konstantinos Tserpes***

7538 SIMULATING ATOMIC FO RCE MICROSCOPY FOR T HE DETERMINATION OF THE ELASTIC PROPERTIES O F NANO PARTICLE REINFORCED EPOXY RESIN
***Johannes Fankhänel**, Andreas Kempe, Raimund Rolfes*

7586 MULTI-SCALE FINITE ELEMENT ANALYSIS OF GRAPHENE/POLYMER NANOCOMPOSITES ELECTRICAL BEHAVIOR
***Asimina Manta**, Matthieu Gresil, Constantinos Soutis*

7828 THERMOMECHANICAL PREDICTION OF GRAPHENE NANOCOMPOSITES
***Androniki Tsiamaki**, Nikolaos Anifantis*

9883 MULTI-SCALE SIMULATION OF TENSILE BEHAVIOR OF MWCNT/PP NANOCOMPOSITE
***Aggeliki Chanteli**, Konstantinos Tserpes, Spiros Pantelakis*

12069 DETERMINATION OF RVE SIZE FOR RANDOM CNT REINFORCED COMPOSITES
***Dimitrios Savvas**, George Stefanou, Vissarion Papadopoulos, Manolis Papadrakakis*

Thursday, June 9 **Room 2**
8:30-10:50

MS 1208: BIFURCATIONS AND STABILITY
MS Organizers: Pekka Neittaanmäki, Nikolay Banichuk, Juha Jeronen, Tero Tuovinen
Chair: Nikolay Banichuk, Tero Tuovinen

6245 BIFURCATION OF AN AXIALLY MOVING PLATE SUBJECTED TO CROSS-DIRECTIONAL POTENTIAL FLOW
***Tero Tuovinen**, Nikolay Banichuk, Juha Jeronen*

8009 BUCKLING OF ANNULAR PLATE JOINT WITH CIRCULAR BEAM
***Sergei Filippov**, Maria Boyarskaya*

8131 ON THE STABILITY AND TRAJECTORIES OF THE DOUBLE PENDULUM WITH LINEAR SPRINGS AND DAMPERS
***Juha Jeronen**, Reijo Kouhia*

11151 STABILITY OF STEEL STRUCTURES WITH CLEARANCES AND IMPERFECTION
***Katarzyna Rzeszut**, Andrzej Garstecki*

6234 ON ASYMPTOTIC PROPERTIES AND BIFURCATION ANALYSIS OF IMPLICITLY GIVEN FUNCTIONALS
***Nikolay Banichuk**, Alexander Barsuk, Pekka Neittaanmäki, Tero Tuovinen*

8365 THE CURL AND FLUTING OF PAPER: THE EFFECT OF ELASTO-PLASTICITY
***Anna-Leena Erkkilä**, Teemu Leppänen, Tero Tuovinen*

9339 LINEAR STABILITY AND POST-BIFURCATION ANALYSIS FOR LOCALISATION OF DEFORMATION OF A ROCK LAYER WITH COSSERAT MICROSTRUCTURE
***Hadrien Rattez**, Ioannis Stefanou, Jean Sulem*

Thursday, June 9 **Room 3**
8:30-10:30

MS 409 - 3: CURRENT TRENDS IN MODELLING AND SIMULATION OF TURBULENT FLOWS
MS Organizers: Suad Jakirlić, ERCOFTAC SIG15
Chair: Suad Jakirlić

8987 CONTRIBUTION TO THE DEVELOPMENT OF AN R_IJ-EPSILON_IJ TURBULENCE CLOSURE
***G.A. Gerolymos**, I. Vallet*

8346 ON TWO ROADBLOCKS FOR PHYSICS-BASED RANS TURBULENCE MODELING
***Svetlana V. Poroseva**, Scott M. Murman*

11680 A MODIFIED SSG/LLR-OMEGA REYNOLDS STRESS MODEL FOR PREDICTING BLUFF BODY AERODYNAMICS
***Csaba Klajbár**, László Könözsy, Karl W. Jenkins*

6906 NUMERICAL VALIDATION OF A FOUR PARAMETER LOGARITHMIC TURBULENCE MODEL
*Daniele Cerroni, **Roberto Da Vià**, Sandro Manservisi, Filippo Menghini*

7659 INFLUENCE OF A NON-LINEAR TURBULENCE MODEL EXTENSION ON THE PREDICTION OF A TURBULENT FLOW OVER A BACKWARD-FACING STEP
*Tobias Schumm, **Franco Magagnato**, Bettina Frohnapfel*

10979 A WAY TO IMPROVE JET MODELING WITHIN RANS EQUATION SYSTEM
Alexey Troshin

Thursday, June 9 **Room 4**
8:30-10:50

MS 701 - 1: ADVANCED MATERIALS: COMPUTATIONAL ANALYSIS OF PROPERTIES AND PERFORMANCE

MS Organizers: Vadim V. Silberschmidt, Valery P. Matveenko
Chair: Vadim V. Silberschmidt, Valery P. Matveenko

7715 COMPUTATIONAL MODELLING OF MECHANICAL BEHAVIOR OF BIOLOGICAL TISSUES FOR BIOMEDICAL APPLICATIONS
Simin Li, Yang Liu, Juan Du, Begum Zeybek, Lorenzo Zani, Mark P. Lewis, ***Vadim V. Silberschmidt***

4544 ON THE REINFORCEMENT OF CEMENT MORTARS THROUGH 3D PRINTED POLYMERIC AND METALLIC
Francesco Fabbrocino, Ilenia Farina, ***Ada Amendola****, Luciano Feo, Fernando Fraternali*

6417 AEROELASTIC STABILITY OF TWO PARALLEL FGM PLATES INTERACTING WITH FLOWING FLUID
Sergey Bochkarev, ***Sergey Lekomtsev****, Valery Matveenko*

7427 STRESS-ENHANCED DIFFUSION AND SURFACE EFFECTS IN LI-ION BATTERY ELECTRODE NANOPARTICLES
Peter Stein*, Bai-Xiang Xu*

7039 A TEMPERATURE SENSITIVE CRYSTAL PLASTICITY MODEL FOR THE PREDICTION OF HIGH TEMPERATURE MECHANICAL BEHAVIOUR OF MULTI-PHASE TIAL ALLOY
Muhammad Umer Ilyas*, M. Rizviul Kabir*

7815 THE USE OF EQUIVALENT CIRCUITS FOR OPTIMIZATION OF DISSIPATIVE PROPERTIES OF ELECTROELASTIC BODIES WITH EXTERNAL ELECTRIC CIRCUITS
Dmitrii Oshmarin*, Valerii Matveenko, Nataliya Sevodina, Nataliia Iurlova*

7255 NUMERICAL SIMULATION OF MULTILAYER COMPOSITE MATERIALS WITH DEFECTS UNDER STATIC LOADING
Valeriy Korepanov*, Valeriy Matveenko, Grigoriy Serovaev*

Thursday, June 9 **Room 5**
8:30-10:30

MS 911 - 1: NUMERICAL METHODS IN THE MECHANICS OF GENERALIZED CONTINUA

MS Organizers: Elena Atroshchenko, Jack S. Hale, George Bourantas, Stéphane P.A Bordas
Chair: Elena Atroshchenko

9921 **KEYNOTE:** A TRANSIENT GRADIENT DAMAGE MODEL FOR LOCALIZED BRITTLE FAILURE
Leong Hien Poh

5724 THE STRUCTURAL SYMMETRY WITHIN THE CONTEXT OF NONLOCAL ELASTICITY
Aurora Angela Pisano, ***Paolo Fuschi***

9577 A KERNEL REDUCTION SCHEME FOR FRACTIONAL DIFFERENTIAL EQUATIONS AND DISCRETIZATION METHODS
Daniel Baffet*, Jan Hesthaven*

11097 A COMPARISON OF COMPUTATIONAL FORMATS OF GRADIENT-EXTENDED CRYSTAL VISCOPLASTICITY IN THE CONTEXT OF SELECTIVE HOMOGENIZATION
Kristoffer Carlsson*, Kenneth Runesson, Magnus Ekh, Fredrik Larsson*

Thursday, June 9 **Room 7**
8:30-10:30

MS 608: ADVANCES IN TIME INTEGRATION FOR SOLID, FLUID AND COUPLED SYSTEMS

MS Organizers: Ilinca Stanciulescu, Peter Betsch
Chair: Ilinca Stanciulescu, Peter Betsch

8082 STRUCTURE-PRESERVING OPTIMAL CONTROL OF DISCRETE MECHANICAL SYSTEMS
Peter Betsch*, Christian Becker*

10163 VARIATIONAL INTEGRATORS OF MIXED ORDER FOR DYNAMICAL SYSTEMS WITH MULTIPLE TIME SCALES AND SPLIT POTENTIALS
Theresa Wenger, Sina Ober-Blöbaum, ***Sigrid Leyendecker***

7883 ENERGY AND MOMENTUM CONSERVING VARIATIONAL BASED TIME INTEGRATION OF ANISOTROPIC HYPERELASTIC CONTINUA
Michael Groß*, Rajesh Ramesh, Julian Dietzsch*

11733 CO-SIMULATION OF LARGE MBD, FEA AND DEM SYSTEMS.
Jose Ortiz*, Neil MacDonald*

6676 MIXED INTEGRATORS FOR STRUCTURE-PRESERVING SIMULATIONS IN NONLINEAR STRUCTURAL DYNAMICS
Alexander Janz*, Peter Betsch, Christian Hesch*

4537 ENERGY CONSERVING TIME INTEGRATION BASED ON GALERKIN-VARIATIONAL INTEGRATORS WITH CONSTRAINTS
Matthias Bartelt*, Michael Groß*

Thursday, June 9 **Room 8**
8:30-10:30

MS 109 - 1: ADVANCED ANALYSIS OF MATERIALS & STRACTURAL SOLUTIONS IN SAFETY & BIOMECHANICS

MS Organizers: Jerzy Malachowski, Piotr W. Sielicki
Chair: Piotr W. Sielicki

10470 THE BEHAVIOUR OF A LIGHTWEIGHT ELEVATION SYSTEM UNDER IMPROVISED EXPLOSIVE DEVICE ACTION: EXPERIMENT VS. NUMERICAL VERIFICATION
Piotr W. Sielicki*, Tomasz Łodygowski, Wojciech Sumelka, Karol Puk*

11082 ON A TWO-CRITERIA OPTIMISATION IN SURGICAL MESH IMPLANTATION FOR TREATMENT OF VENTRAL HERNIA
Izabela Lubowiecka, ***Katarzyna Szepietowska****, Agnieszka Tomaszewska, Czesław Szymczak*

11148 HUMAN IDENTIFICATION BASED ON GAIT PARAMETERS – RECOGNITION OF PERSON AND GENDER
Tomasz Walczak*, Jakub Krzysztof Grabski, Magdalena Grajewska, Martyna Michałowska*

10425 FE MODELLING OF TIRE IN THE ASPECT OF DYNAMIC SAFETY ANALYSIS
Paweł Baranowski*, Jerzy Małachowski*

Thursday, June 9 **Room 9**
8:30-10:50

MS 709: INTEGRATED COMPUTATIONAL MATERIALS ENGINEERING - ICME

MS Organizers: Gottfried Laschet, Javier Llorca, Michele Chiumenti
Chair: Rajiv Shivpuri

9207 **KEYNOTE:** MUESLI: A MATERIAL UNIVERSAL LIBRARY
***Ignacio Romero**, David Portillo, Daniel del Pozo, Daniel Rodríguez, Javier Segurado*

10965 **KEYNOTE:** MULTI-SCALE MODELING OF DIFFUSION-CONTROLLED PROCESSES DURING ULTRASONIC BONDING
*Siavash Soltani-Bajestani, Maryam Gholamirad, **Panthea Sepehrband***

6075 EFFECTIVE FLOW CURVES OF FERRITE/PEARLITE MICROSTRUCTURES AND THEIR USE IN CUTTING SIMULATIONS OF STEEL GEARS
***Gottfried Laschet**, Viktor Kripak, Andre Texeira, Benjamin Döbbeler, Fritz Klocke, Ulrich Prahl*

11255 COUPLING THERMODYNAMIC DATABASES WITH LARGE SCALE PHASE-FIELD SIMULATIONS
***Michael Selzer**, Michael Kellner, Philipp Steinmetz, Johannes Hötzer, Britta Nestler*

16672 MULTISCALE FRAMEWORK FOR DEFECT SENSITIVE DESIGN OF PROCESSES FOR REDUCED FAILURE RISK
Rajiv Shivpuri

Thursday, June 9 **Room 10**
8:30-10:30

MS 710: MODELING OF INTERFACE BEHAVIOR IN COMPOSITES

MS Organizers: Swantje Bargmann, Ingo Scheider, Andrew McBride
Chair: Ingo Scheider

11299 CONTINUUM DAMAGE MODEL SIMULATING THE FAILURE MECHANISMS IN HARD BIOLOGICAL MATERIALS: THE ROLE OF INTERFACE STRENGTH ON DAMAGE EVOLUTION.
***Ingo Scheider**, Songyun Ma, Swantje Bargmann*

7368 A REMEDY FOR TRACTION OSCILLATIONS IN INTERFACE ELEMENTS
***Erik Svenning**, Martin Fagerström, Fredrik Larsson*

6851 SCALAR PARAMETER ANALYSIS OF THREE-DIMENSIONAL INTERFACIAL CORNER OF JOINTED DISSIMILAR ANISOTROPIC MATERIALS
***Toru Ikeda**, Yuji Koga*

10409 AGING OF THE FIBER-MATRIX INTERFACE IN GLASS-FIBER-REINFORCED POLYAMIDE 66 COMPOSITES – EXPERIMENTS AND MODELLING
***Camilo Cruz**, Matthias De Monte, Liu Yang, James Thomason*

11956 A MESOSCALE APPROACH FOR MODELLING PLASTIC DEFORMATION IN INTERFACE DOMINATED MICROSTRUCTURES
***Katrin Schulz**, Peter Gumbsch*

Thursday, June 9 **Room 11**
8:30-10:30

MS 918: COMPUTER ALGEBRA SYSTEMS IN MODELLING STATIC AND DYNAMIC PROBLEMS IN MECHANICS OF SOLIDS

MS Organizers: Alexander V. Matrosov, Dmitriy P. Goloskokov
Chair: Theodoros Patsios

5100 HIGH COMPUTATIONAL EFFICIENCY THROUGH GENERIC ANALYTICAL FORMULATION FOR LINEAR SOIL PRESSURE DISTRIBUTION OF RIGID SPREAD RECTANGULAR FOOTINGS
***John Bellos**, Nikolaos P. Bakas*

5682 A REAL-SPACE MODAL ANALYSIS METHOD FOR NON-PROPORTIONAL DAMPED STRUCTURES
Evgueni Stanoev

11971 A FORCE-BASED FORMULATION FOR THE ANALYSIS OF 3-DIMENSIONAL INELASTIC STRUCTURAL FRAMES
***Theodoros Patsios**, Konstantinos Spiliopoulos*

13932 THE FEATURES OF ANALYTICAL SOLUTIONS OF BOUNDARY VALUE PROBLEMS OF THE ELASTICITY THEORY FOR FINITE DOMAINS WITH ANGULAR POINTS OF A BOUNDARY
*Alexander Kerzhaev, **Mikhail Kovalenko**, Irina Menshova*

Thursday, June 9 **Room 12**
8:30-10:30

MS 1003 - 3: ADVANCES IN DESIGN OPTIMIZATION OF STRUCTURES AND MATERIALS

MS Organizers: Zhen Luo, Zhan Kang
Chair: Peter Dunning, Georgios Michailidis

6346 MULTI-OBJECTIVE DESIGN EXPLORATION SYSTEM FOR MATERIAL DESIGN OF FILLED RUBBERS
***Masataka Koishi**, Naoya Kowatari, Bruno Figliuzzi, Matthieu Faessel, Francois Willot, Dominique Jeulin*

7461 TOPOLOGY OPTIMIZATION WITH IMPLICIT FUNCTION AND PARAMETERIZED CUTTING SURFACE
Peter Dunning

5095 DESIGN OF ISOTROPIC MICROSTRUCTURES VIA A TWO-SCALE APPROACH
***Alexis Faure**, Georgios Michailidis, Rafael Estevez, Guillaume Parry, Grégoire Allaire*

8286 TOPOLOGICAL SHAPE OPTIMIZATION FOR STRUCTURAL FREQUENCY RESPONSE PROBLEMS USING PARAMETRIC LEVEL SET METHOD
***Hao Li**, Liang Gao, Zhen Luo, Tao Wu*

9589 TOPOLOGY OPTIMIZATION OF MAGNETORHEOLOGICAL (MR) FLUID LAYERS WITH SEMI-ACTIVE VIBRATION CONTROL IN A SANDWICH PLATE
***Xiaopeng Zhang**, Zhan Kang*

Thursday, June 9 **Room 15**
8:30-10:30

CS 620 - 1: COMPUTATIONAL CONTACT MECHANICS
Chair: Dario Mangoni

10259 SOLVING UNILATERAL CONTACT PROBLEMS IN MULTIBODY DYNAMICS USING A PRIMAL-DUAL INTERIOR POINT METHOD
***Dario Mangoni**, Alessandro Tasora*

10682 A FORMULATION BASED ON DIFFERENTIAL VARIATIONAL INEQUALITIES FOR DYNAMICAL PROBLEMS WITH DEFORMABLE CONTACTS
***Alessandro Tasora**, Dario Mangoni, Iryna Yasinskaya*

5085 ANALYSIS OF IMPACT SIMULATIONS USING REDUCED FLEXIBLE MULTIBODY SYSTEMS AND QUASI-STATIC CONTACT FORCE EVALUATION
***Stephan Tschigg**, Robert Seifried*

7959 ENHANCED ABRASION MODEL FOR TIRE TREAD WEAR
***Vinh Hiep Nguyen**, Peter Wriggers*

10541 MASTER-SURFACE TO MASTER-SURFACE FRICTIONAL CONTACT FOR BEAM-TO-BEAM APPLICATIONS
*Alfredo Gay Neto, **Paulo Pimenta**, Peter Wriggers*

11829 APPLICATIONS OF B-DIFFERENTIAL EQUATIONS METHOD FOR THE CONTACT PROBLEMS WITH NON-MATCHING MESHES
Zhiqiang Hu

Thursday, June 9 **Room 17**
8:30-10:30

CS 1100: REDUCTION ORDER METHODS
Chair: Valery Makhavikou

6194 EVALUATION OF LINE-FITTING METHOD OF MODEL ORDER REDUCTION
***Valery Makhavikou**, Roland Kasper, Dmitry Vlasenko*

7681 AN EFFICIENT ORDER REDUCTION STRATEGY IN EARTHQUAKE NONLINEAR RESPONSE ANALYSIS OF STRUCTURES
*Franz Bamer, **Abbas Kazemi Amiri**, Christian Bucher*

11968 EXTENSION AND APPLICATION OF A NONLINEAR REDUCED ORDER MODEL TO GUST LOAD PREDICTION IN TIME DOMAIN
***Christoph Strobach**, Klemens Lindhorst, Matthias Haupt, Peter Horst*

7806 ACTIVE SUBSPACES FOR THE PRELIMINARY FLUID DYNAMIC DESIGN OF UNCONVENTIONAL TURBOMACHINERY
***Sebastian Bahamonde**, Matteo Pini, Piero Colonna*

7544 ELEMENT-BASED MODEL REDUCTION FOR PARAMETER DEPENDENT PARABOLIC PDES ON NETWORKS
***Maximilian Walther**, Günter Leugering*

5334 SNAPSHOTS LOCATION IMPROVEMENT USING LOCAL MESH ADAPTIVITY TECHNIQUES FOR THE REDUCED MODEL APPROACH
***Iñigo Bidaguren Diego**, Lakhdar Remaki, Jesús María Blanco Ilzarbe*

Thursday, June 9 **Room 18**
8:30-10:30

MS 607 - 1: ADVANCES IN COMPUTATIONAL METHODS FOR LIQUID-VAPOR FLOWS WITH PHASE TRANSFER PROCESSES
MS Organizers: Rémi Abgrall, Pietro M. Congedo, Tore Flåtten, Bernhard Müller, Marica Pelanti, Maria Giovanna Rodio
Chair: Rémi Abgrall

6007 NUMERICAL MODELLING OF THREE-PHASE LIQUID-VAPOR-GAS FLOWS WITH THERMODYNAMIC RELAXATION
Marica Pelanti

7880 DISPERSED PHASES IN MULTIFLUID MODELS
Tore Flåtten

9128 A LARGE TIME STEP ROE SCHEME APPLIED TO TWO-PHASE FLOW
*Sofia Lindqvist, **Halvor Lund***

6494 APPLICATION OF THE LARGE TIME STEP METHOD TO THE TWO-FLUID MODEL
***Marin Prebeg**, Tore Flåtten, Bernhard Müller*

4854 A "SUSBSONIC APPROXIMATION OF THE TWO-PHASE CONTACT" TO COMPUTE THE BAER-NUNZIATO MODEL USING A HLLC-TYPE RIEMANN SOLVER
***Hippolyte Lochon**, Frederic Daude, Pascal Galon, Jean-Marc Herard*

12305 MATHEMATICAL ANALYSIS AND NUMERICAL SIMULATION OF BOILING FLOWS IN NUCLEAR POWER PLANTS
***Michaël Ndjinga**, Thi Phuong Kieu Nguyen, Christophe Chalons*

Thursday, June 9 **Room 20**
8:30-10:30

MS 905 - 2: DISCONTINUOUS GALERKIN METHODS: NEW TRENDS AND APPLICATIONS
MS Organizers: Sonia Fernández-Méndez, Nicoletta Franchina
Chair: Sonia Fernández-Méndez, Nicoletta Franchina

7229 **KEYNOTE:** SPLITFORM DISCONTINUOUS GALERKIN SCHEMES FOR THE COMPRESSIBLE NAVIER-STOKES EQUATIONS
***Gregor Gassner**, Andrew Winters*

7364 COMPARISON OF CONTINUOUS AND DISCONTINUOUS METHODS IN INCOMPRESSIBLE FLUID FLOW PROBLEMS
***Mahendra Paipuri**, Sonia Fernández Méndez, Carlos Tiago*

5391 DISCONTINUOUS GALERKIN COMPUTATION OF GASEOUS MIXTURE COAXIAL JETS
***Nicoletta Franchina**, Marco Savini, Francesco Bassi*

10816 MATRIX-FREE MODIFIED EXTENDED BACKWARD DIFFERENTIATION FORMULAE APPLIED TO THE DISCONTINUOUS GALERKIN SOLUTION OF COMPRESSIBLE UNSTEADY VISCOUS FLOWS
***Alessandra Nigro**, Carmine De Bartolo, Andrea Crivellini, Francesco Bassi*

7694 SPACE-TIME ADAPTIVE ADER DISCONTINUOUS GALERKIN FINITE ELEMENT SCHEMES WITH A POSTERIORI SUB-CELL FINITE VOLUME LIMITING
***Francesco Fambri**, Olindo Zanotti, Michael Dumbser, Arturo Hidalgo*

Thursday, June 9 **Room 21**
8:30-10:30

MS 1215 - 1: NONLINEAR VIBRATIONS OF CONSERVATIVE AND NONCONSERVATIVE SYSTEMS: PHENOMENA AND ADVANCED NUMERICAL METHODS

MS Organizers: Malte Krack, Ludovic Renson, Gaëtan Kerschen
Chair: Malte Krack

5453 SELF-ADAPTIVITY OF A BEAM WITH SLIDING MASS UNDER HARMONIC EXCITATION
***Malte Krack**, Lawrence A. Bergman, Alexander F. Vakakis*

9654 REDUCED ORDER MODELS FOR DYNAMIC BEHAVIOR OF PRESTRESSED ELASTOMER DAMPING DEVICES
***Antoine Legay**, Jean-François Deü, Benjamin Morin*

11221 TOWARDS EXPERIMENTAL REPRODUCTION OF BACKBONE CURVES OF CONTINUOUS STRUCTURES USING SINGLE POINT FORCED EXCITATION
***Alexander Shaw**, Tom Hill, Simon Neild, Michael Friswell*

4914 FORCED RESPONSE OF SHROUDED BLADES WITH VARIABLE OPERATING POINTS
***Ferhat Kaptan**, Lars Panning-von Scheidt, Jörg Wallaschek, Victor Salit*

10962 IN-PLANE STRESSES IN AXIALLY MOVING NONLINEAR ORTHOTROPIC CONTINUA
***Matti Kurki**, Juha Jeronen, Tero Tuovinen*

9813 LOCALIZATION OF VIBRATORY ENERGY OF A LINEAR SYSTEM IN A CHAIN OF FOUR NONLINEAR OSCILLATORS
***Simon Charlemagne**, Claude-Henri Lamarque, Alireza Ture Savadkoohi*

Thursday, June 9 **Room 22**
8:30-10:50

MS 1224: INNOVATIVE SOLUTIONS FOR THE SEISMIC PROTECTION OF INDUSTRIAL BUILDINGS

MS Organizers: Walter Salvatore, Carlo Castiglioni, Francesco Morelli, Nikolaos Bakas
Chair: Nikolaos Bakas, Francesco Morelli

11722 PERFORMANCE-BASED NONLINEAR RESPONSE HISTORY ANALYSIS FRAMEWORK FOR THE PROINDUSTRY PROJECT CASE STUDIES
***Marco Faggella**, Raffaele Laguardia, Rosario Gigliotti, Franco Braga, Francesco Morelli, Walter Salvatore*

9475 REGRESSION ANALYSIS VS GENETIC ALGORITHMS: COMPUTATIONAL EFFICIENCY ASSESMENT ON THE DESIGN OF PROINDUSTRY PROJECT SSDC ISOLATORS UNDER INCREMENTAL DYNAMIC LOADING
***Nikolaos Bakas**, John Bellos, Alper Kanyilmaz, Spyros Makridakis*

10247 EFFICIENCY OF SEISMIC ISOLATION ON INDUSTRIAL PLANTS - CASE STUDY OF A GAS TANK
***José Henriques**, Francesco Morelli, Bram Vandoren, Walter Salvatore, Hervé Degée*

8781 SEISMIC RETROFIT OF AN INDUSTRIAL STRUCTURE THROUGH AN INNOVATIVE SELF-CENTERING HYSTERETIC DAMPER: MODELLING, ANALYSIS AND OPTIMIZATION.
***Francesco Morelli**, Andrea Piscini, Walter Salvatore*

11993 PERFORMANCE BASED EARTHQUAKE ASSESSMENT OF AN INDUSTRIAL SILOS STRUCTURE AND RETROFIT WITH SLIDING ISOLATORS
***Edoardo Rossi**, Michelangelo Ventrella, Marco Faggella, Rosario Gigliotti, Franco Braga*

8876 PERFORMANCE ASSESSMENT OF SEISMIC RETROFITTING MEASURES ON SILO STRUCTURES USING INNOVATIVE SEISMIC PROTECTION SYSTEMS
***Marius Pinkawa**, Hoffmeister Benno, Feldmann Markus*

9498 SEISMIC RETROFIT OF INDUSTRIAL SILOS BY MEANS OF BASE ISOLATION DEVICES
***Alper Kanyilmaz**, Carlo Andrea Castiglioni, Julia Georgi*

Thursday, June 9 **Room 23**
8:30-10:30

MS 1009 - 5: ADJOINT METHODS FOR STEADY & UNSTEADY OPTIMIZATION

MS Organizers: Kyriakos C. Giannakoglou, Jens Dominik Mueller
Chair: Evangelos Papoutsis-Kiachagias

6434 ADJOINT-BASED OPTIMIZATION FRAMEWORK FOR NON-IDEAL COMPRESSIBLE FLUID FLOWS APPLIED TO ORGANIC RANKINE CYCLE TURBINES
***Salvatore Vitale**, Tim Albring, Nicolas R. Gauger, Piero Colonna, Matteo Pini*

7153 CAD-FREE SOFT HANDLE PARAMETERIZATION FOR ADJOINT-BASED OPTIMIZATION METHODS
***Athanasios G. Liatsikouras**, George S. Eleftheriou, Guillaume Pierrot, Mustafa Megahed*

7279 ON THE MULTIGRID OPTIMIZATION STRATEGY FOR CONTROL OF A TURBULENT FLOW
***Cornelia Nita**, Stefan Vandewalle, Johan Meyers*

8798 GEOMETRIC IMMERSED BOUNDARIES (GIB): A NEW FRAMEWORK FOR APPLYING BOUNDARY CONDITIONS IN OPENFOAM®
***Georgios Karpouzas**, Eugene de Villiers*

6968 DEFROSTER NOZZLE SHAPE OPTIMIZATION USING THE CONTINUOUS ADJOINT METHOD
Lefki Germanou, Evangelos Papoutsis-Kiachagias, ***Antoine Delacroix**, Kyriakos Giannakoglou*

8922 TRANSITION FROM 2D CONTINUOUS ADJOINT LEVEL SET TOPOLOGY TO SHAPE OPTIMIZATION
***J.R.L. Koch**, E.M. Papoutsis-Kiachagias, K.C. Giannakoglou*

10:30-11:00
Coffee Break

SEMI-PLENARY LECTURES

Thursday, June 9 **Zeus East**
11:00-13:00

Chair: Xavier Oliver

2276 MODEL ORDER REDUCTION FOR MULTISCALE MODELING AND SIMULATION
Assyr Abdulle

12176 ON WEAKLY-INTRUSIVE MULTI-SCALE SUBSTITUTION METHOD IN DYNAMICS: PRINCIPLE AND FIRST APPLICATIONS
Olivier Allix*, Omar Bettinotti, Umberto Perego, Victor Oncea, Benoit Malherbe*

12484 MULTI-SCALE MODELLING OF LOCALISED FAILURE PROCESSES
Amin Karamnejad, ***Bert Sluys***

Thursday, June 9 **Zeus North**
11:00-13:00

Chair: Ernst Rank

15672 ISOGEOMETRIC TECHNIQUES FOR MORTARING AND CONTACT MECHANICS
Annalisa Buffa

12905 THE PHASE-FIELD APPROACH TO FRACTURE: MODELING AND COMPUTATIONAL ASPECTS
Laura De Lorenzis

12267 ISOGEOMETRIC ANALYSIS OF MULTIPATCH SHELLS
Pablo Antolìn, Annabelle Collin, ***Giancarlo Sangalli****, Thomas Takacs*

Thursday, June 9 **Zeus West**
11:00-13:00

Chair: George Karniadakis

12288 GETTING THE MOST OUT OF COMMERCIAL CFD CODES IN PROCESS ENGINEERING ANALYSIS
Eleni Koronaki, Nikolaos Cheimarios, ***Andreas Boudouvis***

12202 HEMODYNAMICS OF BIOLOGIC AND MECHANICAL PROSTHETIC HEART VALVES
Roberto Verzicco*, Marco D. de Tullio*

15978 CONTINUOUS ADJOINT-BASED OPTIMIZATION IN FLUID MECHANICS & AERODYNAMICS: RECENT PROGRESS AND APPLICATIONS
Kyriakos C. Giannakoglou, *E.M. Papoutsis-Kiachagias, I.S. Kavvadias*

Thursday, June 9 **Minos East**
11:00-12:20

Chair: Wolfgang A. Wall

13777 ON THE IMPOSITION OF ESSENTIAL BOUNDARY CONDITIONS ON NON-MATCHING FINITE ELEMENT MESHES
Ramon Codina

5426 COMPUTATIONAL TIME REVERSAL AND DAMAGE IDENTIFICATION
Dan Givoli*, Eli Turkel, Eyal Amitt*

Thursday, June 9 **Minos North**
11:00-12:20

Chair: Pedro Diez

16509 COMPUTATIONAL MULTISCALE METHODS FOR TURBULENT SINGLE- AND TWO-PHASE FLOWS
Ursula Rasthofer

16497 EFFICIENT TECHNIQUES FOR THE MODEL ORDER REDUCTION OF PARAMETRIZED PROBLEMS IN COMPUTATIONAL FLUID AND SOLID MECHANICS
Federico Negri

13:00-14:30
Lunch Break

TECHNICAL SESSIONS

Thursday, June 9 **Zeus East**
14:30-16:30

MS 403 - 3: PARTICLE-BASED METHODS IN FLUID MECHANICS

MS Organizers: Sergio Idelsohn, Eugenio Oñate
Chair: Umberto Perego, Massimiliano Cremonesi

16535 **KEYNOTE:** ADVANCES IN THE PARTICLE FINITE ELEMENT METHOD FOR MULTIDISCIPLINARY PROBLEMS
Eugenio Oñate, *Sergio Idelsohn*

10839 A NUMERICAL INVESTIGATION OF FLOW DYNAMICS OVER A TRAPEZOIDAL SMOOTH OPEN CHANNEL
Giacomo Viccione

10842 A NUMERICAL INVESTIGATION OF LIQUID IMPACT ON PLANAR SURFACES.
Giacomo Viccione*, Vittorio Bovolin, Eugenio Pugliese Carratelli*

11373 AERODYNAMICS OF AN UNSTEADY PARTICLE FLOW IN THE CHUTE
Olga Averkova, ***Ivan Logachev****, Konstantin Logachev*

5267 DYNAMICS OF DUST PARTICLES NEAR THE ROUND BELL SUCTION INLET
Olga Averkova, ***Konstantin Logachev****, Artur Logachev, Elena Tolmacheva*

Thursday, June 9 **Zeus West**
14:30-16:30

MS 708: INELASTIC PROCESSES IN HETEROGENEOUS MATERIALS

MS Organizers: Hermann G. Matthies, Adnan Ibrahimbegović
Chair: Adnan Ibrahimbegović

6540 **KEYNOTE:** MULTI-SCALE MODELLING OF HETEROGENEOUS MATERIALS TAKING INTO ACCOUNT EXPERIMENTAL RESULTS
Hermann G. Matthies

10533 VIRTUAL-POWER-BASED QUASICONTINUUM METHODS FOR DISCRETE DISSIPATIVE MATERIALS
Lars Beex

MS 807: ADVANCED COMPUTATIONAL STRATEGIES FOR MODELLING, SIMULATION AND CHARACTERISATION OF MULTI-SCALE HETEROGENEOUS MATERIALS

MS Organizers: Stéphane Bordas, Daniel Dias-da-Costa, Fabrice Pierron, Timon Rabczuk, Pierre Kerfriden, Pascal Lava
Chair: Daniel Dias-da-Costa

6259 MODELING OF MATRIX PLASTICITY AND FAILURE IN COMPOSITES ACROSS THE SCALES
Frans van der Meer

10908 GUARANTEED ERROR BOUNDS FOR RVE BASED HOMOGENISATION
Daniel Alves Paladim*, Pierre Kerfriden, Stephane Bordas*

10914 VALIDATION OF A DISCRETE CRACK MODEL FOR LIGHTWEIGHT AGGREGATE CONCRETE BEAMS
Daniel Dias-da-Costa*, R. Graça-e-Costa, R.N.F. Carmo*

Thursday, June 9 **Zeus North**
14:30-16:30

MS 901 - 7: ISOGEOMETRIC METHODS

MS Organizers: Yuri Bazilevs, David J. Benson, Rene De Borst, Thomas J.R. Hughes, Trond Kvamsdal, Alessandro Reali, Giancarlo Sangalli, Clemens V. Verhoosel
Chair: Clemens V. Verhoosel

4533 **KEYNOTE:** ISOGEOMETRIC ANALYSIS SUITABLE TRIVARIATE MODELS FROM CUBOID DECOMPOSITION QUADRANGULATION
Hassan Al Akhras, ***Thomas Elguedj****, Anthony Gravouil, Michel Rochette*

9818 ISOGEOMETRIC COLLOCATION: TREATMENT OF NEARLY-INCOMPRESSIBILITY IN LARGE DEFORMATION ELASTICITY
Roland Kruse*, Frederik Fahrendorf, Laura De Lorenzis*

9041 ISOGEOMETRIC ANALYSIS OF ACOUSTIC SCATTERING USING INFINITE ELEMENTS
Jon Vegard Venås*, Trond Kvamsdal, Trond Jenserud*

8908 A DESIGN-BY-ANALYSIS TOOL FOR FILAMENT-WOUND THICK-WALLED COMPOSITE PRESSURE VESSELS BASED ON ISOGEOMETRIC ANALYSIS
Jörg B. Multhoff

7680 IMPLEMENTATION OF IGA INTO A COMMERCIAL FEA SOFTWARE FOR HIGHER-ORDER CONTINUUM MECHANICS PROBLEMS
Sergei Khakalo*, Jarkko Niiranen, Viacheslav Balobanov*

Thursday, June 9 **Minos East**
14:30-16:30

MS 602 - 3: INNOVATIVE METHODS FOR FLUID-STRUCTURE-INTERACTION

MS Organizers: E. Harald van Brummelen, Roger Ohayon, Trond Kvamsdal
Chair: E. Harald van Brummelen

8141 PARTITIONED FLUID-STRUCTURE INTERACTION ON DISTRIBUTED DATA
Benjamin Uekermann*, Florian Lindner, Miriam Mehl, Klaudius Scheufele*

6182 THREE-DIMENSIONAL FLUID STRUCTURE INTERACTION BETWEEN A COMPRESSIBLE FLUID AND A FRAGMENTING STRUCTURE WITH A CONSERVATIVE IMMERSED BOUNDARY METHOD
Maria Adela Puscas, ***Laurent Monasse****, Alexandre Ern, Christian Mariotti, Christian Tenaud*

10755 NUMERICAL MODELING OF FLOW-DRIVEN PIEZOELECTRIC ENERGY HARVESTERS
Srivathsan Ravi*, Andreas Zilian*

10856 SIMULATION OF ELASTO-CAPILLARY INTERACTIONS OF SOFT MATERIALS USING DIFFUSE INTERFACE MODELS
Mahnaz Shokrpour*, E. Harald van Brummelen, Gertjan van Zwieten, Herman M.A. Wijshoff*

7573 ROBUST QUASI-NEWTON METHODS FOR THE COUPLING OF PARTITIONED FSI SIMULATIONS
Klaudius Scheufele*, Miriam Mehl, Benjamin Uekermann*

Thursday, June 9 **Minos North**
14:30-16:30

MS 614 - 1: YOUNG INVESTIGATORS MINISYMPOSIUM
MS Organizers: Jaan-Willem Simon, Alexander Popp, Joan Baiges
Chair: Alexander Popp

9853 A NANO-MACRO BOTTOM-UP APPROACH TOWARDS BRITTLE FRACTURE
***Sandeep Patil**, Yousef Heider, Carlos Hernandez Padilla, Eduardo Cruz Chu, Bernd Markert*

11944 SOME RECENT ADVANCES IN DIRECT METHODS FOR LIMIT STATES OF ENGINEERING MATERIALS
*Geng Chen, **Konstantinos Nikolaou**, Christoph Broeckmann, Dieter Weichert, Christos Bisbos*

10280 DESIGN PROCESS OF A BIOMIMETIC FACADE ELEMENT INSPIRED BY THE CARNIVOROUS PLANT ALDROVANDA VESICULOSA
***Renate Sachse**, Axel Körner, Manfred Bischoff, Jan Knippers*

9906 BAYESIAN APPROACH VS. PROBABILITY BOXES FOR MECHANICAL COMPUTATIONS CONSIDERING UNCERTAINTIES
***Amélie Fau**, Bojana Rosić*

Thursday, June 9 **Minos South**
14:30-16:30

MS 1204 - 1: NONLINEAR DYNAMICS OF ROTATING STRUCTURES
MS Organizers: Evangeline Capiez-Lernout, Marc P. Mignolet, Christian Soize
Chair: Christian Soize

8090 COMPUTATIONAL MODELING STRATEGIES FOR THE NONLINEAR MISTUNING OF AN INDUSTRIAL BLADED DISK.
***Evangéline Capiez-Lernout**, Christian Soize, Moustapha Mbaye*

8946 COMBINING FINITE ELEMENT ANALYSIS AND ANALYTICAL MODELLING FOR EFFICIENT SIMULATIONS OF NON-LINEAR GEAR DYNAMICS
*Shadi Sweiki, Jakub Korta, Antonio Palermo, Rocco Adduci, **Domenico Mundo***

10382 DAMPING INDUCED BY DRY FRICTION: ANALYSES AND EXPERIMENTS FOR MODELING IMPROVEMENT
*Marc-André Douville, Béatrice Faverjon, Eric Chatelet, **Georges Jacquet-Richardet***

7831 MODAL IDENTIFICATION BASED FLOATING FRAME OF REFERENCE FORMULATION OF SMALL-SIZE WIND TURBINE
Ayman A. Nada

6781 DELAYED FEEDBACK CONTROL METHOD FOR CALCULATING SPACE-TIME PERIODIC SOLUTIONS OF VISCOELASTIC PROBLEMS
***Ustim Khristenko**, Patrick Le Tallec*

Thursday, June 9 **Danae**
14:30-16:30

MS 108 - 1: NUMERICAL METHODS FOR COUPLED PROBLEMS IN BIOMEDICAL APPLICATIONS
MS Organizers: Martina Bukac, Annalisa Quaini
Chair: Annalisa Quaini

11735 **KEYNOTE:** A MODEL FOR DRUG TRANSPORT IN TUMOR
***Milos Kojic**, Miljan Milosevic, Vladimir Simic, Mauro Ferrari, Eugene J. Koay, Arturas Ziemys*

8117 A PARTITIONED NUMERICAL SCHEME FOR THE INTERACTION BETWEEN BLOOD, ARTERIAL WALL AND THROMBUS
Martina Bukac

9269 PARALLEL ALGORITHMS FOR FLUID AND RIGID BODY INTERACTION APPLIED TO BIOMECHANICS PROBLEMS
***Cristóbal Samaniego**, Guillaume Houzeaux, Mariano Vázquez*

8619 A FENICS-HPC FRAMEWORK FOR MULTI-COMPARTMENT BLOCH-TORREY MODELS
***Dang Van Nguyen**, Johan Jansson, Johan Hoffman*

Thursday, June 9 **Europa**
14:30-16:30

CS 630 - 3: SIMULATION OF FLUID-STRUCTURE INTERACTION
Chair: Koulis Pericleous

11358 DISPERSION OF NANO PARTICLES IN MELTS USING ELECTROMAGNETIC WAVE ACTION
*Valdis Bojarevics, Georgi Djambazov, Bruno Lebon, Anton Manoylov, **Koulis Pericleous**, David Burnard, William Griffiths, Dmytro Shevchenko*

5264 DIRECT EDDY CURRENT METHOD FOR VOLUMETRIC FLAWS OF CYLINDRICAL SHAPE
*Valentina Koliskina, **Andrei Kolyshkin**, Rauno Gordon, Olev Märtens*

6498 MATHEMATICAL MODELING AND NUMERICAL SIMULATION OF MAGNETOELASTIC COUPLING
***Mané Harutyunyan**, Bernd Simeon*

5825 MODELLING OF INTERFACE ELASTICITY EFFECTS IN METAL-POLYMER ACTUATORS
***Jana Wilmers**, Andrew McBride, Swantje Bargmann*

4678 3D DRBEM MODELING FOR ROTATING INITIALLY STRESSED ANISOTROPIC FUNCTIONALLY GRADED PIEZOELECTRIC PLATES
Mohamed Abdelsabour Fahmy

Thursday, June 9 **Leda**
14:30-16:30

MS 904 - 2: ADVANCED MINIMIMAL RESIDUAL DISCRETIZATION
MS Organizers: Carsten Carstensen, Dietmar Gallistl
Chair: Dietmar Gallistl

7642 LOW-ORDER DPG-FEMS FOR LINEAR ELASTICITY
***Friederike Hellwig**, Carsten Carstensen*

8521 A STABLE DPG METHOD FOR THE TRANSPORT EQUATION
***Dirk Broersen**, Wolfgang Dahmen, Rob Stevenson*

7721 A LOW-ORDER DISCONTINUOUS PETROV GALERKIN FEM FOR STOKES
*Carsten Carstensen, **Sophie Louise Puttkammer***

7970 LEAST-SQUARES MIXED FINITE ELEMENTS IN RELATION TO MIXED FINITE ELEMENTS FOR ELASTICITY
***Fleurianne Bertrand**, Zhiqiang Cai*

Thursday, June 9 **Athena**
14:30-16:30

MS 1401 - 2: TOICA: THERMAL OVERALL INTEGRATED CONCEPT AIRCRAFT

MS Organizers: Pierre Arbez, Jean-Claude Dunyach
Chair: Pierre Arbez

5273 COLLABORATIVE ENGINEERING TECHNOLOGIES ENABLING MULTI-PARTNER THERMAL ANALYSIS IN EARLY DESIGN STAGES OF AIRCRAFT
***Erik Baalbergen**, Wim Lammen, Bert de Wit, Robert Maas, Marie Moghadasi, Johan Kos, Fabio Chiacchio*

6687 AUTOMATIC GENERATION OF 2D AXISYMMETRIC FINITE ELEMENT MODELS FROM 3D QUASI-AXISYMMETRIC COMPONENTS
***Jorge Camacho**, Trevor T. Robinson, Cecil C.Armstrong, Pierre Costini*

4991 THERMAL TRADE OFF SUSTAINED BY MULTI DISCIPLINARY AND MULTI LEVEL OPTIMIZATION
***Olivier Tabaste**, Cedric Campguilhem*

9483 THE QUALITY GATES CAPABILITIES THE TOICA PROJECT
Jean-Claude Dunyach

Thursday, June 9 **Artemis**
14:30-16:50

STS 7: MORPHING TECHNOLOGIES FOR AIRCRAFT WINGS

STS Organizers: Hans Peter Monner
Chair: Hans Peter Monner

14433 DEVELOPMENT AND ASSESSMENT OF THE ENHANCED ADAPTIVE DROOP NOSE IN THE SARISTU PROJECT
***Markus Kintscher**, Johannes Kirn*

14447 WINGTIP ACTIVE TRAILING EDGE FOR LOADS ALLEVIATION
***Andreas Wildschek**, Stefan Storm, Johannes Kirn*

14442 AN ADAPTIVE TRAILING EDGE FOR LARGE COMMERCIAL AIRCRAFT
***Antonio Concilio**, Ignazio Dimino, Rosario Pecora*

STS 8: SIMULATION AND VALIDATION OF COMPOSITE STRUCTURES IN AERONAUTICS

STS Organizers: Piet Woelkens
Chair: Martin Bach

14476 VALIDATION & VERIFICATION OF PROBABILITY OF DETECTION USING GUIDED WAVES ON THE EXAMPLE OF A LARGE, COMPLEX CFRP STRUCTURE
***Martin Bach**, N. Dobmann, B. Eckstein, M. Moix Bonet, B. Newman*

14464 STRUCTURAL HEALTH MONITORING FOR THE MAINTENANCE OF AIRCRAFTS
***Alessandro Marzani**, L. De Marchi, A. Apicella*

14461 DAMAGE TOLERANCE AND ELECTRICAL IMPROVEMENT OF COMPOSITE STRUCTURES
***Sonia Flórez Fernandez**, Idoia Gaztelumendi, J. Gayoso*

15461 APPLICATION OF SYNTHETIC JETS ACTUATORS IN WING-PYLON JUNCTION AREA TO IMPROVE THE HIGH LIFT PERFORMANCES
Petr Vrchota

Thursday, June 9 **Aphrodite**
14:30-16:30

MS 102 - 1: COMPUTATIONAL MODELS IN BIOMECHANICS AND MECHANOBIOLOGY

MS Organizers: Estefania Peña, Renato Natal Jorge, Miguel A. Martínez, Pedro S. Martins
Chair: Perumal Nithiarasu

9194 **KEYNOTE:** A LOCALLY CONSERVATIVE GALERKIN (LCG) METHOD IN ITS SEMI- AND FULLY- IMPLICIT FORMS FOR SOLVING BLOOD FLOW IN SYSTEMIC CIRCULATIONS
*Hayder Hasan, **Perumal Nithiarasu***

9329 AN INFLUENCE OF TEMPERATURE ON DYNAMICS OF SMART MIDDLE EAR PROSTHESIS
***Rafal Rusinek**, Jerzy Warminski, Marcin Szymanski, Andrzej Weremczuk, Krzysztof Kecik*

11529 PERFORMANCE EVALUATION OF MODULAR 3D PRINTED ANKLE FOOT ORTHOSES
***Alessio Ielapi**, B. Verhegghe, M. Vermandel, J. P. Deckers, E. Vasiliauskaite, F. Plasschaert, M. De Beule*

8586 BREAST-CONSERVING SURGERY: A VALIDATED 3D, MULTISCALE, MECHANO-BIOLOGICAL, MODELLING FRAMEWORK FOR SURGICAL PLANNING AND COSMETIC OUTCOME PREDICTION OF BREAST CANCER TREATMENT
***Vasileios Vavourakis**, B. Eiben, J. H. Hipwell, N. R. Williams, M. Keshtgar, D. J. Hawkes*

9423 COMPUTATIONAL SIMULATION OF BIOFILM FORMATION END EXPERIMENTAL VALIDATION IN A MULTI-PHYSICS FRAMEWORK
***Meisam Soleimani**, Peter Wriggers, Meike Stiesch*

Thursday, June 9 **Antigoni**
14:30-16:30

MS 201 - 2: MICROSTRUCTURE-DRIVEN DEFORMATION AND FAILURE IN CRYSTALLINE MATERIALS

MS Organizers: Pilar Ariza, Lucia Nicola, Angelo Simone
Chair: Lucia Nicola, Pilar Ariza

9366 LONG-TERM ATOMISTIC SIMULATION OF LITHIATION IN SILICON-BASED LITHIUM BATTERIES
***Juan Pedro Mendez Granado**, M. Ortiz*

7493 NUMERICAL MODEL FOR A DISLOCATION INDUCED INTERFACE DECOHESION USING A PEIERLS-NABARRO APPROACH
***Franz Bormann**, Ron Peerlings, Marc Geers*

7527 INVESTIGATION OF CREEP AND LOAD SHEDDING IN POLYCRYSTALLINE TITANIUM ALLOYS USING DISCRETE DISLOCATION PLASTICITY
*Zebang Zheng, **Daniel Balint**, Fionn Dunne*

8723 LONG-TERM ATOMISTIC ANALYSIS OF HYDROGEN DIFFUSION IN NANOMATERIALS
***Xingsheng Sun**, Pilar Ariza, Kevin Wang*

9188 DEVELOPMENT AND RELAXATION OF INTRINSIC STRESS FOR THIN FILMS DEPOSITED ON A SUBSTRATE: A DISCRETE DISLOCATION FRAMEWORK
Can Ayas

8943 GREEN'S FUNCTION MOLECULAR DYNAMICS MEETS DISCRETE DISLOCATION PLASTICITY
*Syam Venugopalan, **Lucia Nicola***

Thursday, June 9 **Apollo East**
14:30-16:30

MS 711- 2: FOURIER-BASED METHODS FOR COMPUTING THE BEHAVIOR OF HETEROGENEOUS MATERIALS DEVELOPMENTS, EXTENSIONS AND APPLICATIONS

MS Organizers: Lionel Gélébart, Hervé Moulinec, Franz Roters, François Willot

Chair: Franz Roters, François Willot

8909 FFT-SCHEMES FOR SOLVING HEAT CONDUCTIVITY PROBLEMS WITH UNIFORM BOUNDARY CONDITIONS
***François Willot**, Haisheng Wang*

10165 ON THE CONVERGENCE TEST OF FFT-BASED METHODS
*Graeme Milton, **Hervé Moulinec**, Pierre Suquet*

8401 CONTINUUM DISLOCATION MECHANICS FIELD EQUATIONS SOLVED BY FFT METHODS
***Djaka Komlan Sénam**, Taupin Vincent, Berbenni Stéphane, Fressengeas Claude*

10781 A GALERKIN VIEW ON FFT-BASED HOMOGENIZATION METHODS
***Jan Zeman**, Jaroslav Vondřejc, Ivo Marek, Nachiketa Mishra, Tom de Geus, Ron Peerlings, Marc Geers*

7442 FFT-BASED SOLUTION: A COMPLEX METHOD MADE SIMPLE (EVEN FOR 3-D FINITE STRAIN)
***Tom de Geus**, Ron Peerlings, Jaroslav Vondrejc, Jan Zeman, Marc Geers*

Thursday, June 9 **Apollo West**
14:30-16:30

MS 204 - 2: IMPACT AND CRASH MECHANICS

MS Organizers: Manfred Bischoff, Fabian Duddeck

Chair: Manfred Bischoff, Fabian Duddeck

11054 EVOLUTIONARY LEVEL SET METHOD FOR CRASHWORTHINESS TOPOLOGY OPTIMIZATION
***Mariusz Bujny**, Nikola Aulig, Markus Olhofer, Fabian Duddeck*

11243 AN ACCURATE, EFFICIENT, AND ROBUST CONTACT DETECTION PROCEDURE IN ISOGEOMETRIC CONTACT ANALYSIS
***Ján Kopačka**, Dušan Gabriel, Radek Kolman, Jiří Plešek*

6072 A SIMPLIFIED MODEL OF A STEEL COLUMN SUBJECTED TO IMPACT
***Piseth Heng**, Mohammed Hjiaj, Jean-Marc Battini*

7007 MATERIAL MODELLING OF CAST ALUMINIUM BY APPLICATION OF THE WILKINS DAMAGE MODEL
***Christian Mühlstätter**, Matthias Hartmann*

Thursday, June 9 **Room 1**
14:30-16:30

MS 412: NUMERICAL METHODS FOR WAVES AND FLOWS IN COASTAL AND DEEP WATER HYDRODYNAMICS

MS Organizers: Nina Shokina, Yuri Shokin, Leonid Chubarov, Gayaz Khakimzyanov, Vadym Aizinger, Denys Dutykh

Chair: Nina Shokina

6359 NEW ALGORITHM FOR NUMERICAL SIMULATION OF SURFACE WAVES WITHIN THE FRAMEWORK OF THE FULL NONLINEAR DISPERSIVE MODEL
*Zinaida Fedotova, Oleg Gusev, **Gayaz Khakimzyanov***

8456 DISCONTINUOUS GALERKIN METHOD FOR COASTAL OCEAN
Vadym Aizinger

10278 ON NUMERICAL METHODS FOR SOLVING RUN-UP PROBLEMS. COMPARATIVE ANALYSIS OF NUMERICAL ALGORITHMS AND NUMERICAL RESULTS.
*Leonid Chubarov, Alexandr Rychkov, **Gayaz Khakimzyanov**, Yurii Shokin*

8432 NUMERICAL MODELLING OF SURFACE WAVES IN THE FRAMEWORK OF THE SHALLOW WATER MODEL
***Nina Shokina**, Gayaz Khakimzyanov*

MS 615: COMPUTATIONAL MODELS IN MAGNETOHYDRODYNAMICS

MS Organizers: Oleg Zikanov

9799 LARGE EDDY SIMULATIONS OF MAGNETIC FIELD EFFECT ON TURBULENT FLOW IN A SQUARE DUCT
***Jie Mao**, Kunlei Zhang, Zhongquan Tan, Ke Liu*

10250 NUMERICAL SIMULATION OF THE FLUID FLOW IN CONTINUOUS CASTING MOLD CONTROLED BY A COMBINATION OF ELECTROMAGNETIC FIELD
***Engang Wang**, Fei Li, Zhuang Li, Lin Xu, Anyuan Deng*

Thursday, June 9 **Room 2**
14:30-16:30

MS 413 - 1: COMPUTATIONAL METHODS IN ENVIRONMENTAL FLUID MECHANICS

MS Organizers: Kazuo Kashiyama, Etahn Kubatko, Joannes Westerink

Chair: Etahn Kubatko

8240 ACOUSTIC SIMULATION USING VIRTUAL REALITY TECHNOLOGY
***Kazuo Kashiyama**, Toru Yoshimachi, Riichiro Okamura, Kazuhiro Nakamura, Anri Ishida*

10208 INTEGRATION OF A STORM SURGE MODEL INTO A COMPUTATIONAL FRAMEWORK FOR CRISIS MAPPING
***Molly Moran**, Ethan J. Kubatko*

11207 A COMPARISON OF MESH MOVEMENT SCHEMES WITH APPLICATION TO ENVIRONMENTAL FLUID DYNAMICS PROBLEMS
***Benjamin Yeager**, Matthew Piggott, Juan Rattia, Timothy McManus, Paul Holland*

10143 MULTI-LEVEL HP-ADAPTIVITY AND THE FINITE CELL METHOD FOR FLUID PROBLEMS
***Philipp Kopp**, Nils Zander, Stefan Kollmannsberger, Ernst Rank*

10066 MODELLING PARTICLE ENTRAINMENT IN MOUNTAIN TORRENTS: LINKING TURBULENCE TO LOCAL BED GEOMETRY AND TO THE GRAIN SURFACE
***Albrecht von Boetticher**, James Kirchner, Stefan Pirker, Helmut Habersack, Nikolai Kornev*

Thursday, June 9 **Room 3**
14:30-16:30

MS 603 - 1: COMPUTATIONAL METHODS IN FLUID-STRUCTURE INTERACTION WITH IMPACT ON INDUSTRIAL APPLICATIONS

MS Organizers: Elisabeth Longatte, Yannick Hoarau, Marianna Braza

Chair: Elisabeth Longatte, Yannick Hoarau, Marianna Braza

6769 SLAMMING IMPACT SIMULATION OF 2D WATER ENTRY FOR RIGID STRUCTURES
***Omar Hashim Al-Dodoee**, Mostapha Tarfaoui*

9425 A PATH-CONSERVATIVE OSHER-TYPE SCHEME FOR AXIALLY SYMMETRIC COMPRESSIBLE FLOWS IN FLEXIBLE TUBES
***Julia Leibinger**, Michael Dumbser, Uwe Iben*

8479 TRANSIENT MODELLING OF THE FLUID-STRUCTURE INTERACTION OF WIND TURBINES WITH COMPOSITE BLADES
***Gilberto Santo**, Mathijs Peeters, Wim Van Paepegem, Joris Degroote*

10071 FLUID-STRUCTURE INTERACTION WITHIN AN ARRAY OF TUBES WITH OVERSET GRID APPROACH.
*Anthony Ponce, Vilas Shinde, **Yannick Hoarau**, Elisabeth Longatte, Franck Baj, Marianna Braza*

13692 A NUMERICAL STUDY OF FLUID-STRUCTURE INTERACTION IN A TANDEM OF CYLINDERS CONFIGURATIONS AT HIGH REYNOLDS NUMBER
*Damien Szubert, Thibaut Deloze, **Yannick Hoarau**, Elisabeth Longatte, A. Aalilija, Y. Boutrif, Chrisophe Heudes, Marianna Braza*

Thursday, June 9 **Room 4**
14:30-16:30

MS 701 - 2: ADVANCED MATERIALS: COMPUTATIONAL ANALYSIS OF PROPERTIES AND PERFORMANCE

MS Organizers: Vadim V. Silberschmidt, Valery P. Matveenko
Chair: Valery P. Matveenko, Vadim V. Silberschmidt

6820 THEORETICAL MODELS AND NUMERICAL SIMULATION OF NONLINEAR BEHAVIOR OF COMPOSITE MATERIALS
***Lomakin Evgeny**, Fedulov Boris*

7575 LAYOUT OPTIMIZATION OF PIEZOELECTRIC ELEMENTS WITH EXTERNAL ELECTRIC CIRCUITS IN SMART CONSTRUCTIONS BASED ON SOLUTION OF THE NATURAL VIBRATIONS PROBLEM
***Nataliia Iurlova**, Valerii P. Matveenko, Dmitriy A. Oshmarin, Nataliya V. Sevodina, Maksim A. Yurlov*

7616 DETERMINATION OF OPTIMAL PARAMETERS FOR A PASSIVE RL-CIRCUIT BY SOLVING THE PROBLEM ON NATURAL VIBRATIONS OF ELECTROELASTIC BODIES
***Maksim Yurlov,** Valerii P. Matveenko, Dmitriy A. Oshmarin, Nataliya V. Sevodina, Nataliya A. Iurlova*

11059 SEVEN DIFFERENT WAYS TO MODEL VISCOELASTICITY IN A GEOMETRICALLY EXACT SETTING
Alexey Shutov

7871 ANALYSIS OF FIBRE BRAGG GRATINGS SENSORS OPTIMAL PLACEMENT FOR MONITORING OF DAMAGE PROPAGATION IN LAMINATE COMPOSITES
Mikhail Tashkinov

9462 NUMERICAL SIMULATION OF MULTILAYER COMPOSITE MATERIALS WITH DEFECTS UNDER STATIC LOADING
***Valeriy Korepanov**, Valeriy Matveenko, Grigoriy Serovaev*

Thursday, June 9 **Room 5**
14:30-16:30

MS 911 - 2: NUMERICAL METHODS IN THE MECHANICS OF GENERALIZED CONTINUA

MS Organizers: Elena Atroshchenko, Jack S. Hale, George Bourantas, Stéphane P.A Bordas
Chair: Leong Hien Poh

11076 CRACK-INCLUSION INTERACTION IN PLANE MICROPOLAR ELASTICITY
***Elena Atroshchenko**, Javier Videla*

7675 ISOGEOMETRIC ANALYSIS OF GRADIENT-ELASTIC TIMOSHENKO BEAMS
***Viacheslav Balobanov**, Jarkko Niiranen, Sergei Khakalo*

9170 ISOGEOMETRIC GALERKIN METHODS FOR GRADIENT-ELASTIC BARS, BEAMS, MEMBRANES AND PLATES
***Jarkko Niiranen**, Sergei Khakalo, Viacheslav Balobanov, Josef Kiendl, Antti H. Niemi, Bahram Hosseini, Alessandro Reali*

MS 912 - 1: HIGH-ORDER METHODS, SENSITIVITY ANALYSIS AND ADAPTATION FOR THE NAVIER STOKES EQUATIONS

MS Organizers: Vincent Couaillier, Rémi Abgrall, Eusebio Valero
Chair: Vincent Couaillier

5698 ADAPTATION STRATEGIES FOR HIGH ORDER DISCONTINUOUS GALERKIN METHODS BASED ON TAU-ESTIMATION
***Eusebio Valero**, Moritz Kompenhans, Gonzalo Rubio, Esteban Ferrer*

11051 APPROPRIATE COMBINATIONS OF CONTROLLERPARAMETERS FOR UNSTEADY FLOWS IMULATIONS WITH ADAPTIVE TIME STEP CONTROL
***Kathrin Kozulovic**, Graham Ashcroft*

Thursday, June 9 **Room 7**
14:30-16:30

MS 1225 - 1: SEISMIC PERFORMANCE ASSESSMENT OF STRUCTURES AND SEISMIC RISK MITIGATION STRATEGIES

MS Organizers: Marco Vona
Chair: Marco Vona

10028 A CRITICAL REVIEW OF FRAGILITY CURVES FOR EXISTING RC BUILDINGS
*Monica Mastroberti, **Marco Vona***

10800 DYNAMIC IDENTIFICATION OF A RC HOSPITAL BUILDING
***Giorgio Lacanna**, Pauline Deguy, Maurizio Ripepe, Massimo Baglione, Mario De Stefano, Marco Tanganelli, Stefania Viti*

12031 TOWARDS INTEGRATED SEISMIC RISK ASSESSMENT IN PALESTINE - APPLICATION TO THE CITY OF NABLUS
*Ricardo Monteiro, Paola Ceresa, **Vania Cerchiello**, Jamal Dabeek, Antonella Di Meo, Barbara Borzi*

11825 COMPUTER-AIDED SEISMIC RISK ASSESSMENT AT URBAN SCALE. MODEL DEFINITION AND VALIDATION ON A CASE STUDY
***Alberto Basaglia**, Alessandra Aprile, Francesco Pilla, Enrico Spacone*

11992 PARAMETRIC CHARACTERIZATION OF ITALIAN RC BRIDGES FOR SEISMIC VULNERABILITY ASSESSMENT
***Claudia Zelaschi**, Ricardo Monteiro, Rui Pinho*

8224 PROBABILISTIC SEISMIC DAMAGE CONTROL ANALYSIS OF SUB-STANDARD BRIDGE COLUMNS
M. Saiid Saiidi

Thursday, June 9 **Room 8**
14:30-16:30

MS 109 - 2: ADVANCED ANALYSIS OF MATERIALS & STRACTURAL SOLUTIONS IN SAFETY & BIOMECHANICS

MS Organizers: Jerzy Malachowski, Piotr W. Sielicki
Chair: Piotr W. Sielicki

10597 HUMAN BODY MOTION UNDER EXPLOSION: NUMERICAL ANALYSIS OF BLAST AND PERSONAL SAFETY
*Piotr W. Sielicki, **Tomasz Gajewski***

10934 INVESTIGATION OF EXTERNAL BLAST WAVE EFFECTS ON HUMAN BODY INSIDE THE VEHICLE
***Grzegorz Sławiński**, Tadeusz Niezgoda, Marcin Wojtkowski*

10939 ANALYSIS OF STRUCTURAL ELEMENT WITH AND WITHOUT PROTECTIVE COVER UNDER IMPULSE LOAD
***Tadeusz Niezgoda**, Grzegorz Sławiński*

10160 NUMERICAL ANALYSIS OF CRIMPING AND IMPLEMENTATION PROCESS OF CORONARY STENT USING IMPLICIT SCHEME
*Jakub Bukala, **Jerzy Malachowski***

Thursday, June 9 **Room 9**
14:30-16:30

MS 705: IDENTIFICATION OF MATERIAL MODELS

MS Organizers: Danuta Szeliga, Wacław Kuś, Tadeusz Burczyński, Jan Kusiak
Chair: Tadeusz Burczyński

6471 APPLICATION OF TENSOR DECOMPOSITION TO THE CALIBRATION OF NONLINEAR CONSTITUTIVE MATERIAL LAWS
*Clément Olivier, David Ryckelynck, **Julien Cortial**, Christian Rey*

9138 THE BOOTSTRAP APPROACH TO THE STATISTICAL SIGNIFICANCE OF PARAMETERS IN RSM MODEL
***Jacek Pietraszek**, Leszek Wojnar*

10907 A BAYESIAN APPROACH FOR PARAMETER IDENTIFICATION IN ELASTOPLASTICITY
***Hussein Rappel**, Lars A.A. Beex, Jack S. Hale, Stephane P.A. Bordas*

11289 CHARACTERIZATION OF STRAIN-RATE EFFECTS IN LASER SHEET FORMING
***Diego Celentano**, Javier Castillo, Marcela Cruchaga*

7243 GEOMETRICAL REPRESENTATION OF RAILWAY BALLAST USING THE DISCRETE ELEMENT METHOD (DEM)
***Joaquín Irazábal**, Fernando Salazar, Eugenio Oñate*

10502 IDENTIFICATION OF MULTISCALE MATERIAL MODELS IMPLEMENTED INTO VIRTROLL SYSTEM FOR HOT STRIP ROLLING
*Lukasz Rauch, Alexsander Nam, Rudolf Kawalla, **Jan Kusiak**, Maciej Pietrzyk*

Thursday, June 9 **Room 10**
14:30-16:30

MS 715 - 1: COMPUTATIONAL ANALYSIS OF COMPOSITE STRUCTURES

MS Organizers: Efstathios E. Theotokoglou
Chair: Efstathios E. Theotokoglou

5675 **KEYNOTE:** CONSTITUTIVE CHARACTERIZATION OF COMPOSITES VIA INVERSE METHODS ENABLED BY ROBOTIC MULTIAXIAL TESTING AND HIGH-PERFORMANCE FULL-FIELD METHODS
***John Michopoulos**, Athanasios Iliopoulos, John Hermanson, John Steuben*

4654 MINIMAL MASS DESIGN OF STRENGTHENING TECHNIQUES FOR PLANAR AND CURVED MASONRY STRUCTURES
*Gerardo Carpentieri, Francesco Fabbrocino, **Mariella De Piano**, Valentino Paolo Berardi, Luciano Feo, Fernando Fraternali*

6757 CONVERGENCE ANALYSIS OF STRESS FIELDS TO HOMOGENIZATION PREDICTIONS IN OPTIMAL PERIODIC COMPOSITE DESIGN
***Pedro Coelho**, Rui Reis, José Guedes*

10437 SIMULATION OF DAMAGE INDUCED BY A LIGHTNING STRIKE ON A CFRP LAMINATE
***Johann Rannou**, Cédric Huchette, Mohamed Boubekeur*

Thursday, June 9 **Room 11**
14:30-16:30

MS 712 - 1: SMART MATERIAL SYSTEMS AND STRUCTURES

MS Organizers: Mieczysław Kuczma, Pavel Krejči, Jörg Schröder, Georgios E. Stavroulakis, Gwidon Szefer
Chair: Mieczysław Kuczma, Gwidon Szefer

11049 **KEYNOTE:** OPTIMAL CONTROL TUNNING IN SMART STRUCTURES WITH DELAMINATIONS
*Panos Koutsianitis, Amalia Moutsopoulou, Georgios Drosopoulos, Georgios Tairidis, Georgia Foutsitzi, **Georgios Stavroulakis***

11925 MINIMIZATION AND STABILITY OF COUPLED ELECTRO-MECHANICS
*Daniel Vallicotti, Stephan Teichtmeister, Marc-André Keip, **Christian Miehe***

11910 THE POTENTIAL OF VISCOELASTICITY FOR JOINING BAND GAPS IN ACOUSTIC METAMATERIALS
***Miroslawa Lewinska**, Hans van Dommelen, Varvara Kouznetsova, Anastasiia Krushynska, Marc Geers*

9201 METAMATERIAL WITH NEGATIVE STRAIN-RATE SENSITIVITY
***Öztzan Akif**, Simon Konrad Naderer, Stefan Hiermaier*

10021 NONLINEAR CHARACTERIZATION AND MULTISCALE HOMOGENIZATION OF TWO-PHASE MAGNETO-ELECTRIC COMPOSITES
***Matthias Labusch**, Jörg Schröder*

Thursday, June 9 **Room 12**
14:30-16:30

MS 612: NUMERICAL SIMULATIONS FOR SMART-CITY APPLICATIONS

MS Organizers: Julien Waeytens, Rachida Chakir
Chair: Julien Waeytens, Rachida Chakir

8934 COMPARISON OF NUMERICAL TURBULENT FLOWS AND MEASUREMENTS FROM 3D ANEMOMETER IN A CHALET IN VIEW OF INDOOR AIR QUALITY APPLICATIONS
***Julien Waeytens**, Erick Merliot, Rachida Chakir, Damien Joseph, Amita Tripathi*

9249 REDUCED BASIS METHODS FOR CFD PROBLEMS ARISING FROM WATER NETWORK MODELLING
***Rachida Chakir**, Erick Merliot*

11135 COUPLING CFD SOLUTIONS WITH NON BAYESIAN INVERSE MODEL IN URBAN LOCAL SCALE ENVIRONMENTS: OPTIMAL SENSORS NETWORK DEPLOYMENT AND SOURCE APPORTIONMENT FOR AIR QUALITY
***Claude Souprayen**, Damien Joseph, Amita Tripathi*

10335 OPTIMAL CONTROL METHODS FOR ENERGY AND AIR QUALITY MANAGEMENT OF SUBWAY STATIONS
***Tristan Rigaut**, Julien Waeytens, Frédéric Bourquin*

6201 NUMERICAL OPTIMIZATION OF NEAR-ROAD VEGETATION BARRIERS
***Ludek Benes**, Viktor Sip*

8079 NON-INTRUSIVE REDUCED BASIS METHODS APPLIED TO OUTDOOR AIR QUALITY MODELS
***Janelle Katharine Hammond**, Rachida Chakir, Frédéric Bourquin, Yvon Maday*

Thursday, June 9 **Room 15**
14:30-16:30

CS 620 - 2: COMPUTATIONAL CONTACT MECHANICS

Chair: Zdenek Dostal

11611 **KEYNOTE:** SCALABLE MASSIVELY PARALLEL ALGORITHMS FOR CONTACT PROBLEMS
***Zdenek Dostal**, Tomas Kozubek, David Horak, Vaclav Hapla, Alex Markopoulos, Tomas Brzobohaty, Lubos Riha, Oldrich Vlach*

9800 COMPARISON OF CONTACT STRESS REPRESENTATIONS USING THE MORTAR METHOD AND DUAL LAGRANGE MULTIPLIERS
***Christoph Wilking**, Manfred Bischoff*

7055 LARGE DEFORMATION CONTACT FORMULATION USING CARTESIAN GRIDS AND CAD DEFINITION OF THE BOUNDARY
***Jose Manuel Navarro**, Manuel Tur, Rubén Sevilla, José Albelda*

7180 A DUAL MORTAR METHOD FOR FINITE DEFORMATION THERMO-MECHANICAL CONTACT – FINITE ELEMENTS AND ISOGEOMETRIC ANALYSIS
***Alexander Seitz**, Wolfgang A. Wall, Alexander Popp*

Thursday, June 9 **Room 17**
14:30-16:30

MS 811: MULTISCALE MODELING OF CONCRETE AND CONCRETE STRUCTURES

MS Organizers: Herbert Mang, Yong Yuan
Chair: Bernhard Pichler

8152 MULTI-SCALE MODELLING OF ASPHALT CONCRETE
***Johannes Wimmer**, Jaan-Willem Simon, Stefanie Reese*

10396 CREEP HOMOGENIZATION OF CEMENTITIOUS MATERIALS
*Markus Königsberger, Muhammad Irfan-ul-Hassan, **Bernhard Pichler**, Christian Hellmich*

11777 NUMERICAL SIMULATION OF THE AUTOGENOUS SHRINKAGE OF HARDENING PORTLAND CEMENT PASTE
*Peng Gao, **Guang Ye**, Jiangxiong Wei, Qijun Yu*

9388 MULTI FILED ANALYSIS ON CREEP BEHAVIOR OF CONCRETE IN LOWER HIGHER TEMPERATURE
***Wei Jiang**, Yong Yuan, Zhenghong Yang*

Thursday, June 9 **Room 18**
14:30-16:30

MS 607 - 2: ADVANCES IN COMPUTATIONAL METHODS FOR LIQUID-VAPOR FLOWS WITH PHASE TRANSFER PROCESSES

MS Organizers: Rémi Abgrall, Pietro M. Congedo, Tore Flåtten, Bernhard Müller, Marica Pelanti, Maria Giovanna Rodio
Chair: Marica Pelanti

9006 A ROBUST EQUATION OF STATE FOR LIQUID-VAPOR MIXTURE
***Pietro Marco Congedo**, Maria Giovanna Rodio, Rémi Abgrall*

7546 AN ALL MACH NUMBER PRESSURE BASED ALGORITHM FOR MULTIPHASE FLOW SIMULATIONS
Ernst A. Meese

7624 A LOW DIFFUSIVE APPROACH FOR TWO PHASE FLOWS
Alberto Beccantini

8127 LARGE TIME STEP SCHEME FOR THE BAER-NUNZIATO MODEL BY MEANS OF A LAGRANGE-PROJECTION TYPE APPROACH
*Christophe Chalons, **Samuel Kokh***

9047 A MIXTURE-ENERGY-CONSISTENT NUMERICAL METHOD FOR COMPRESSIBLE THREE-PHASE FLOW WITH APPLICATION TO LASER-INDUCED CAVITATION BUBBLE
Keh-Ming Shyue

7036 SPLITTING METHOD AND IMPLICIT-EXPLICIT SCHEMES FOR A COMPRESSIBLE GAS-LIQUID MODEL
***Charles Demay**, Jean-Marc Hérard, Christian Bourdarias, Benoit De Laage De Meux, Stéphane Gerbi*

Thursday, June 9 **Room 20**
14:30-16:30

MS 905 - 3: DISCONTINUOUS GALERKIN METHODS: NEW TRENDS AND APPLICATIONS

MS Organizers: Sonia Fernández-Méndez, Nicoletta Franchina
Chair: Sonia Fernández-Méndez, Nicoletta Franchina

4875 A DISSIPATIVE FILTER FOR SUB-CELL DISCONTINUITY CAPTURING WITH THE DISCONTINUOUS GALERKIN METHOD
Konstantinos Panourgias, ***John Ekaterinaris***

6829 A DISCONTINUOUS GALERKIN SCHEME FOR COMPRESSIBLE MULTI-PHASE FLOW
Claus-Dieter Munz*, Stefan Fechter, Timon Hitz*

7733 DISCONTINUOUS GALERKIN SPECTRAL ELEMENT METHODS FOR ELASTODYNAMICS PROBLEMS: APPLICATION TO 3D WAVE PROPAGATIONS.
Ilario Mazzieri*, Alberto Ferroni, Paola Francesca Antonietti, Alfio Quarteroni*

8180 HIGH-ORDER LINEARLY IMPLICIT TWO-STEP PEER METHODS FOR THE DISCONTINUOUS GALERKIN SOLUTION OF THE INCOMPRESSIBLE RANS EQUATIONS
Francesco Carlo Massa, ***Gianmaria Noventa*** *Francesco Bassi, Alessandro Colombo, Antonio Ghidoni, Marco Lorini*

9753 OUTPUT-BASED SPACE-TIME ADAPTATION WITH NON-VARIATIONAL TIME INTEGRATION
Krzysztof Fidkowski

9094 A SPACE-TIME DISCONTINUOUS-GALERKIN APPROACH FOR SEPARATED FLOWS
Scott Murman*, Laslo Diosady, Anirban Garai, Marco Ceze, Corentin Carton de Wiart*

Thursday, June 9 **Room 21**
14:30-16:30

MS 1215 - 2: NONLINEAR VIBRATIONS OF CONSERVATIVE AND NONCONSERVATIVE SYSTEMS: PHENOMENA AND ADVANCED NUMERICAL METHODS

MS Organizers: Malte Krack, Ludovic Renson, Gaëtan Kerschen
Chair: Malte Krack

7157 TOPOLOGY OPTIMIZATION IN NONLINEAR STRUCTURAL DYNAMICS USING DIRECT COMPUTATION OF NONLINEAR COEFFICIENTS
Jakob S. Jensen*, Suguang Dou*

9344 GEOMETRY EFFECTS ON THE NONLINEAR OSCILLATIONS OF VISCOELASTIC CYLINDRICAL SHELLS
Zenon Del Prado*, Marco Amabili, Paulo Gonçalves, Frederico Da Silva*

9834 THEORETICAL AND EXPERIMENTAL STUDIES OF LINEAR AND NONLINEAR BEHAVIORS IN ACOUSTIC RESONATORS
Valentin Alamo Vargas*, Emmanuel Gourdon, Alireza Ture Savadkoohi*

10775 CONTINUATION OF QUASI-PERIODIC SOLUTIONS WITH TWO-FREQUENCY HARMONIC BALANCE METHOD
Louis Guillot, ***Pierre Vigué****, Christophe Vergez, Bruno Cochelin*

5883 FREE PERIODIC OSCILLATIONS OF CNTS SUBJECTED TO ELECTROSTATIC FORCES
Pedro Ribeiro

Thursday, June 9 **Room 22**
14:30-16:30

MS 1103 - 1: MATHEMATICAL SURROGATE MODELLING IN ELECTROMAGNETICS

MS Organizers: Petrie Meyer, Tom Dhaene, Dirk Deschrijver
Chair: Petrie Meyer, Tom Dhaene

5887 CERTIFIED REDUCED BASIS METHODS FOR MICROWAVE MODELS GOVERNED BY TIME-HARMONIC MAXWELL'S EQUATIONS
Peter Benner, ***Martin Hess***

7676 A SHORT-TIME PRONY METHOD FOR THE DETECTION OF TRANSIENTS
Annie Cuyt, ***Wen-shin Lee****, Min-Nan Tsai*

9215 NUMERICAL OPTIMIZATION AND CHALLENGES OF SPHERICAL-WAVE BASED MACRO-MODELLING TECHNIQUES
Bart Boesman*, Georges Gielen, Guy Vandenbosch, Davy Pissoort*

11182 DESIGN OF AXIALLY SYMMETRIC POWER COMBINERS USING SURROGATE BASED OPTIMIZATION
Ryno Beyers*, Dirk de Villiers*

4429 RATIONAL MODELING OF MULTIVARIATE MULTI-FIDELITY DATA
Elizabeth Rita Samuel, ***Dirk Deschrijver****, Luc Knockaert, Tom Dhaene, Annie Cuyt*

8552 COMPARISON STUDY OF PC AND KRIGING BASED SURROGATE MODELING
Arun Kaintura*, Domenico Spina, Ivo Couckuyt, Tom Dhaene*

Thursday, June 9 **Room 23**
14:30-16:30

MS 1009 - 6: ADJOINT METHODS FOR STEADY & UNSTEADY OPTIMIZATION

MS Organizers: Kyriakos C. Giannakoglou, Jens Dominik Mueller
Chair: Kyriakos C. Giannakoglou

9051 AERODYNAMIC SHAPE OPTIMIZATION USING THE TRUNCATED NEWTON METHOD AND CONTINUOUS ADJOINT
Mehdi Ghavami Nejad*, Evangelos M. Papoutsis-Kiachagias, Kyriakos C. Giannakoglou*

9204 SHAPE OPTIMIZATION OF TURBOMACHINERY ROWS USING A PARAMETRIC BLADE MODELLER AND THE CONTINUOUS ADJOINT METHOD RUNNING ON GPUS
F. Gagliardi*, K.T. Tsiakas, X.S. Trompoukis, K.C. Giannakoglou*

9316 GEOMETRIC CONTINUITY CONSTRAINTS FOR ADJACENT NURBS PATCHES IN SHAPE OPTIMISATION
Xingchen Zhang*, Yang Wang, Mateusz Gugala, Jens-Dominik Mueller*

9992 TOWARDS AN OUTPUT-BASED RE-MESHING METHODOLOGY TO THE TURBOMACHINERY CASE
Mateusz Gugala*, Marcus Meyer, Jens-Dominik Mueller*

6621 CAD KERNEL AND GRID GENERATION ALGORITHMIC DIFFERENTIATION FOR TURBOMACHINERY ADJOINT OPTIMIZATION
Ismael Sanchez Torreguitart*, Tom Verstraete, Lasse Mueller*

16:30-17:00
Coffee Break

TECHNICAL SESSIONS

Thursday, June 9 **Minos East**
17:00-19:00

STS 9: ADVANCED WING HIGH-LIFT SYSTEMS
MS Organizers: Jochen Wild
Chair: Jochen Wild

14489 AN OVERVIEW OF CFD-BASED OPTIMIZATION ACTIVITIES FOR HIGH-LIFT SYSTEM DESIGN CARRIED OUT WITHIN THE DESIREH PROJECT
Pierluigi Iannelli

14513 APPLICATION OF SYNTHETIC JETS ACTUATORS IN WING-PYLON JUNCTION AREA TO IMPROVE THE HIGH LIFT PERFORMANCES
Petr Vrchota

15520 DESIGN AND VALIDATION OF ACTIVE FLOW SEPARATION CONTROL AT THE WING/ENGINE JUNCTION
Michael Meyer

14518 NACELLE STRAKE DESIGN FOR A SHORT TAKE-OFF AND LANDING CONFIGURATION WITH TURBOPROPS
Dennis Keller*, Yasim Hasan, Ralf Rudnik*

14496 A SUMMARY OF 10 YEARS OF EUROPEAN RESEARCH WITH THE DLR-F15 HIGH-LIFT AIRFOIL
Jochen Wild

Thursday, June 9 **Minos North**
17:00-19:00

MS 614 - 2: YOUNG INVESTIGATORS MINISYMPOSIUM
MS Organizers: Jaan-Willem Simon, Alexander Popp, Joan Baiges
Chair: Joan Baiges

11075 FOURIER-GALERKIN METHODS AS ALTERNATIVE TO FINITE ELEMENT METHOD FOR NUMERICAL HOMOGENIZATION
Tom de Geus*, Jaroslav Vondřejc*

12097 CHALLENGES IN MULTISCALE MODELING OF COMPOSITE STRUCTURES
Evan Pineda

6233 NODAL INTEGRATION: AN ATTEMPT TO REDUCE SPURIOUS PRESSURE OSCILLATIONS IN THE SIMULATION OF INCOMPRESSIBLE FLOWS USING THE PFEM
Marco Lucio Cerquaglia*, Geoffrey Deliége, Romain Boman, Jean-Philippe Ponthot*

9825 CAN THE SHEAR RESPONSE OF TEXTILE COMPOSITES BE REALISTICALLY DESCRIBED WHEN THE TOWS ARE MODELLED AS HOMOGENIZED MATERIAL?
Jaan-Willem Simon*, Bertram Stier, Stefanie Reese*

6742 COMPLEXITIES OF THE IMPLEMENTATION OF WORK STEALING SCHEDULING STRATEGY FOR EXTENSIVE PARALLEL SCIENTIFIC APPLICATIONS ON STATE-OF-THE-ART HIGH-PERFORMANCE SYSTEMS
Elizaveta Dorofeeva*, Gevorg Poghosyan*

Thursday, June 9 **Minos South**
17:00-19:00

MS 1204 - 2: NONLINEAR DYNAMICS OF ROTATING STRUCTURES
MS Organizers: Evangeline Capiez-Lernout, Marc P. Mignolet, Christian Soize
Chair: Evangeline Capiez-Lernout

4830 A NEW DYNAMIC SUBSTRUCTURING METHOD FOR NONLINEAR AND DISSIPATIVE SYSTEMS
Colas Joannin*, Benjamin Chouvion, Fabrice Thouverez*

6780 SOME REMARKS ON TIME INTEGRATION OF 3D ROTOR-STATOR ASSEMBLY
Benoit Prabel

MS 1209: DYNAMIC ANALYSIS OF BEAMS UNDER MOVING VEHICLES: APPLICATION TO RAILWAY TRACK MODELLING, DESIGN AND REHABILITATION
MS Organizers: Fernando Simões, Antonio Pinto da Costa
Chair: Antonio Pinto da Costa

7515 NUMERICAL DYNAMIC ANALYSIS OF BEAMS ON NONLINEAR ELASTIC FOUNDATIONS UNDER HARMONIC MOVING LOAD
Diego Froio*, Roberto Moioli, Egidio Rizzi*

5568 NUMERICAL ANALYSIS FOR DYNAMIC RESPONSE CHARACTERISTICS OF PRESTRESSED CONCRETE SLEEPER
Tsutomu Watanabe*, Kodai Matsuoka, Shintaro Minoura*

7443 ANALYSIS OF THE EFFECTS OF A MASS-SPRING-SYSTEM IN A TUNNEL USING A COUPLED INTEGRAL TRANSFORM METHOD – FINITE ELEMENT METHOD APPROACH
Manuela Hackenberg*, Gerhard Müller*

Thursday, June 9 **Danae**
17:00-19:00

MS 108 - 2: NUMERICAL METHODS FOR COUPLED PROBLEMS IN BIOMEDICAL APPLICATIONS
MS Organizers: Martina Bukac, Annalisa Quaini
Chair: Martina Bukac

8086 **KEYNOTE:** A NUMERICAL STUDY OF THE DYNAMIC BEHAVIOR OF AN ENCAPSULATED MICROBUBBLE IN A WALL-RESTRICTED FLOW
Maria Vlachomitrou, ***Nikos Pelekasis***

9202 POROELASTIC MODEL OF A CELL DURING CHIMNEYING MIGRATION THROUGH A MICRO-CHANNEL
Solenne Deveraux*, Rachele Allena, Denis Aubry*

11671 UNIFIED THEORY OF ONE-DIMENSIONAL STRUCTURES AND FLOWS WITH APPLICATIONS TO BIOMEDICAL ENGINEERING AND COUPLED PROBLEMS
Alfonso Pagani, ***Daniele Guarnera****, Erasmo Carrera*

11728 NUMERICAL MODELING OF DIFFUSION IN POLY(LACTIC-CO-GLYCOLIC ACID) CONSISTED OF DRUG-LOADED EMULSION ELECTROSPUN NANOFIBERS
Miljan Milosevic*, Milos Kojic, Vladimir Simic, Dusica Stojanovic, Petar Uskokovic*

Thursday, June 9 **Europa**
17:00-19:00

CS 630 - 4: SIMULATION OF FLUID-STRUCTURE INTERACTION
Chair: Haifa Sallem

12003 NUMERICAL SIMULATION OF RESIDUAL DISTORTIONS INDUCED BY WELDING PROCESS
***Haifa Sallem**, Syrine Ben Yahia, Jean Michel Bergheau*

5437 NUMERICAL SIMULATION OF BUOYANT PLUMES USING A FIXED POINT ITERATIVE METHOD
***Blanca Bermúdez**, Alejandro Rangel-Huerta, W. Fermín Guerrero S., José David Alanis Urquieta*

5988 ALGORITHMS BASED ON TIME-DISCONTINUOUS GALERKIN SPACE-TIME FINITE ELEMENTS AND OPERATOR-SPLITTING METHODS FOR GENERALIZED THERMOELASTICITY AT FINITE STRAINS
***Mebratu Wakeni**, Daya Reddy, Andrew McBride*

6475 NUMERICAL STUDY OF TWO OPTIMIZED COUPLING INTERFACE TREATMENTS FOR STEADY CONJUGATE HEAT TRANSFER PROBLEMS
***Marc Paul Errera**, Roch Roukoz El Khoury*

8697 MECHANICAL PROPERTY AND MODELING OF SILICONE FOAM UNDER COMPLEX ENVIRONMENTS INCLUDING GAMMA RADIATION
Guangyong Liu

Thursday, June 9 **Leda**
17:00-19:00

MS 202 - 1: CIVIL ENGINEERING MATERIALS AND STRUCTURES UNDER EXTREME LOADINGS
MS Organizers: Fabrice Gatuingt, Frédéric Dufour, Panagiotis Kotronis
Chair: Fabrice Gatuingt

8339 EQUIVALENT SDOF MODEL FOR ESTIMATING BLAST-INDUCED DYNAMIC REACTIONS OF EQUILATERAL TRIANGULAR HARDENED WALL ELEMENTS
***Sebastian Mendes**, Liling Cao, Douglas Heinze, Elisabeth Malsch*

11112 NUMERICAL STUDY OF THE INFLUENCE OF THE AGGREGATES SPATIAL ARRANGEMENT ON CONCRETE DYNAMIC BEHAVIOUR
***Silvère Pierre**, Fabrice Gatuingt*

9862 MODELING AND SIMULATION FOR AN OPTIMIZED DESIGN OF A DYNAMIC BEND TEST.
***Rana Akiki**, Fabrice Gatuingt, Cédric Giry, Nicolas Schmitt, Lavinia Stéfan*

7300 SIMULATION OF DYNAMIC BEHAVIOR OF QUASI-BRITTLE MATERIALS WITH NEW RATE DEPENDENT DAMAGE MODEL
***Luis Pereira**, J. Weerheijm, L.J. Sluys*

Athena

Thursday, June 9
17:00-19:00

MS 606 - 1: COMPUTATIONAL MODELING OF HYDRAULIC FRACTURING
MS Organizers: Gianluca Cusatis, Gilles Pijaudier-Cabot, Günther Meschke
Chair: Günther Meschke

11918 **KEYNOTE:** MINIMIZATION PRINCIPLES IN MULTI-PHYSICS OF SOLIDS AT FRACTURE
***Christian Miehe**, Stephan Teichtmeister, Steffen Mauthe*

9315 PARAMETRIC STUDY ON HYDRAULIC FRACTURING IN ANISOTROPIC MEDIA
***Valliappan Valliappan**, Joris Remmers, Auke Barnhoorn, David Smeulders*

7950 SENSITIVITY ANALYSIS OF HYDRAULIC FRACTURING USING AN EXTENDED FINITE ELEMENT METHOD FOR THE PKN MODEL
***Hasini Garikapati**, Clemens V. Verhoosel, Harald van Brummelen, Pedro Diez*

6100 THE XFEM FOR A SIMPLIFIED MODEL IN HYDRAULIC FRACTURING
***Markus Schätzer**, Thomas-Peter Fries*

9113 2D MODELLING OF HYDRAULIC FRACTURING IN JOINTED ROCKS WITH A LATTICE APPROACH
***David Grégoire**, Vincent Lefort, Olivier Nouailletas, Gilles Pijaudier-Cabot*

Thursday, June 9 **Artemis**
17:00-19:00

MS 403 - 4: PARTICLE-BASED METHODS IN FLUID MECHANICS
MS Organizers: Sergio Idelsohn, Eugenio Oñate
Chair: Carlos Felippa, Josep Maria Carbonell

4586 A PARTICLE FINITE ELEMENT METHOD FOR MACHINING SIMULATIONS
***Juan Manuel Rodríguez Prieto**, Pär Jonsén, Ales Svoboda*

7321 MODELING OF NON-SPHERICAL, ELONGATED PARTICLES FOR INDUSTRIAL SUSPENSION FLOW SIMULATION
***Jakob Dominik Redlinger-Pohn**, Lisa Maria König, Christoph Kloss, Christoph Goniva, Stefan Radl*

8484 AN IMPLICIT MATERIAL POINT METHOD: FORMULATION AND VALIDATION
***Ilaria Iaconeta**, Antonia Larese, Riccardo Rossi, Eugenio Oñate*

9327 SOME INVESTIGATIONS OF A GENERALIZED PARTICLE METHOD FOR CONVECTION-DIFFUSION EQUATIONS
***Daisuke Tagami**, Yusuke Imoto*

10103 THREE-DIMENSIONAL REMESHED SMOOTHED PARTICLE HYDRODYNAMICS FOR THE SIMULATION OF ISOTROPIC TURBULENCE
Anas Obeidat

7211 RECOVERY OF DIFFERENTIATION/INTEGRATION COMPATIBILITY OF MESHLESS OPERATORS VIA LOCAL ADAPTATION OF THE POINT CLOUD IN THE CONTEXT OF NODAL INTEGRATION
***Gabriel Fougeron**, Guillaume Pierrot*

Thursday, June 9 **Aphrodite**
17:00-19:00

MS 102 - 2: COMPUTATIONAL MODELS IN BIOMECHANICS AND MECHANOBIOLOGY
MS Organizers: Estefania Peña, Renato Natal Jorge, Miguel A. Martínez, Pedro S. Martins
Chair: Pedro S. Martins

10661 HYBRID CELL CENTRED/VERTEX MODEL FOR LARGE TISSUE DEFORMATIONS
***José J. Muñoz**, Payman Mosaffa, Yanlan Mao, Rob Tetley, Nina Asadipour, Antonio Rodríguez-Ferran*

10702 SENSITIVITY OF TEMPERATURE FIELD IN THE SYSTEM PROTECTIVE CLOTHING - FOREARM WITH RESPECT TO PERTURBATIONS OF EXTERNAL HEATING CONDITIONS
***Bohdan Mochnacki**, Mariusz Ciesielski*

10067 IMAGE-BASED CHARACTERIZATION OF LUNG REGIONAL STRAIN: A FINITE-ELEMENT APPROACH TO BIOMECHANICAL IMAGE ANALYSIS
***Daniel Hurtado**, Nicolás Villarroel, Jaime Retamal, Guillermo Bugedo, Alejandro Bruhn*

11792 ANALYSIS OF THE BIOMECHANICAL BEHAVIOR OF ARTERIES FROM INTRA-UTERINE GROWTH RESTRICTED FETUSES
*Daniel Cañas-Quezada, Emilio Herrera, **Claudio García-Herrera**, Bernardo Krause, Diego Celentano*

7851 A COMPUTATIONAL APPROACH TO RED BLOOD CELL ELECTRO-DEFORMATION
*Nicola Antonio Nodargi, Paolo Bisegna, **Federica Caselli***

9651 THE INFLUENCE OF MECHANICAL STIMULUS ON NUTRIENT TRANSPORT AND CELL GROWTH IN ENGINEERED CARTILAGE: A FINITE ELEMENT APPROACH
***Sara Cortez**, A. Completo, J.L. Alves*

11147 CONSTITUTIVE MODELLING OF HYPERELASTIC MATERIALS USING A HYBRID OPTIMIZATION TECHNIQUE
***Pedro Martins,** Renato Natal Jorge, Carla Roque*

Thursday, June 9 **Antigoni**
17:00-19:00

MS 201 - 3: MICROSTRUCTURE-DRIVEN DEFORMATION AND FAILURE IN CRYSTALLINE MATERIALS
MS Organizers: Pilar Ariza, Lucia Nicola, Angelo Simone
Chair: Angelo Simone

7090 TWO-SCALE MODELS OF DYNAMICAL PLASTICITY AND FRACTURE OF ALUMINUM
***Vasiliy Krasnikov**, Alexander Mayer, Dmitriy Voronin*

7861 NON-LOCALIZED DEFORMATION IN METALLIC GLASSES WITH PRE-EXISTING SHEAR BANDS
Shaoxing Qu

8037 ANALYSIS OF SPALL RESPONSE IN ALUMINUM WITH HELIUM BUBBLES UNDER DYNAMIC LOADING
Fengguo Zhang

8601 EJECTA SIZE DISTRIBUTION FOR SHOCK LOADED CU WITH A WEDGED SURFACE GROOVE
***An-Min He**, Pei Wang, Jian-Li Shao*

7783 THREE-DIMENSIONAL CONTINUUM DISLOCATION DYNAMICS SIMULATION OF DISLOCATION STRUCTURES IN DEFORMATION OF MICRO-BEAMS
***Alireza Ebrahimi**, Thomas Hochrainer*

Thursday, June 9 **Apollo East**
17:00-19:00

MS 711- 3: FOURIER-BASED METHODS FOR COMPUTING THE BEHAVIOR OF HETEROGENEOUS MATERIALS DEVELOPMENTS, EXTENSIONS AND APPLICATIONS
MS Organizers: Lionel Gélébart, Hervé Moulinec, Franz Roters, François Willot
Chair: Hervé Moulinec, Franz Roters, François Willot

8684 A COMPARISON BETWEEN DIFFERENT METHODS FOR THE NUMERICAL SIMULATION OF POLYCRYSTALLINE AGGREGATES
***Camille Robert**, Charles Mareau*

7287 ARE FFT-BASED METHODS REALLY THAT DIFFERENT FROM FEM-BASED METHODS?
***Dennis Merkert**, Matthias Kabel, Matti Schneider, Andreas Fink*

7330 CONSTITUTIVE RELATION ERROR FOR FFT-BASED METHODS
***Sébastien Brisard**, Ludovic Chamoin*

8912 A SPECTRAL METHOD TO SOLVE MULTI-PHYSICS COUPLED ELASTO-VISCOPLASTIC BOUNDARY VALUE PROBLEMS
***Pratheek Shanthraj**, Shaokang Zhang, Franz Roters*

9005 MODELING INTERFACE DECOHESION IN A SPECTRAL FRAMEWORK
***Luv Sharma**, Pratheek Shanthraj, Franz Roters, Ron H.J. Peerlings, Marc G.D. Geers*

Thursday, June 9 **Apollo West**
17:00-19:00

MS 204 - 3: IMPACT AND CRASH MECHANICS
MS Organizers: Manfred Bischoff, Fabian Duddeck
Chair: Manfred Bischoff, Fabian Duddeck

7266 COMMONALITY OPTIMIZATION FOR COMPONENTS IN VEHICLE FAMILIES WITH RESPECT TO CRASHWORTHINESS DESIGN
***Lailong Song**, Fabian Duddeck, Johannes Fender*

7268 HOW TO ACCOUNT FOR THE RELAXATION EFFECT OF HIGH DIMENSIONAL CONSTRAINTS IN THE DIRECT SOLUTION SPACE METHOD
***Volker Lange**, Johannes Fender, Fabian Duddeck*

8205 FINITE ELEMENT SIMULATION OF CRACK PROPAGATION AND DELAMINATION IN LAYERED SHELLS DUE TO BLADE CUTTING
***Federica Confalonieri**, Aldo Ghisi, Umberto Perego*

7256 DIRECT METHODS TO DERIVE SOLUTION SPACES FOR VEHICLE CRASH DESIGN
***Johannes Fender**, Fabian Duddeck*

Thursday, June 9 **Room 1**
17:00-19:00

MS 1401 - 3: TOICA: THERMAL OVERALL INTEGRATED CONCEPT AIRCRAFT
MS Organizers: Pierre Arbez, Jean-Claude Dunyach
Chair: Jean-Claude Dunyach, Pierre Arbez

16674 APPLICATION AND VALIDATION OF TOICA CAPABILITIES ON AERONAUTICAL USE CASES
Yves Baudier

6724 AIRBUS PLATEAU AND THE GLOBAL THERMAL AIRCRAFT USE CASE
***Alexandre Massol**, Olivier Broca, Sebastien Rouvreau, Julien Giron*

16676 DASSAULT AVIATION PLATEAU AND BUSINESS JET AIR SYSTEM USE CASE
E. Thomas

11136 AIRBUS HELICOPTERS PLATEAU AND THERMAL MANAGEMENT OF AN AVIONIC BAY USE CASE
***Bertrand Truffart**, Ludovic Allaire, Stéphane Georges, Didier Lefeuve*

16678 THERMAL MODELLING AND INTEGRATION METHODS: EQUIPMENT MODEL SPECIFICATION, EXCHANGE PROCESS, INTEGRATION (FMU)
M. Fouquembergh

Thursday, June 9 **Room 2**
17:00-19:00

MS 413 - 2: COMPUTATIONAL METHODS IN ENVIRONMENTAL FLUID MECHANICS

MS Organizers: Kazuo Kashiyama, Etahn Kubatko, Joannes Westerink
Chair: Kazuo Kashiyama

9151 A MULTIDIMENSIONAL DISCONTINUOUS GALERKIN MODELING FRAMEWORK FOR COUPLED RAINFALL-RUNOFF/RIVERINE FLOW
***Ethan Kubatko**, Dustin West, Mariah Yaufman*

5450 A 2D-3D ONE-WAY COUPLING MODEL BETWEEN PRESSURE POISSON BOUSSINESQ-TYPE METHOD AND PARTICLE METHODS
***Naoto Mitsume**, Aaron S. Donahue, Joannes J. Westerink, Shinobu Yoshimura*

7912 A 2D-3D TSUNAMI HYBRID MODEL USING OVERLAPPING METHOD BASED ON THE STABILIZED FEM
***Guoming Ling**, Junichi Matsumoto, Kazuo Kashiyama*

11071 FINITE ELEMENT PARALLEL COMPUTING FOR A COUPLING METHOD OF 2D SHALLOW WATER FLOW AND 3D GAS-LIQUID TWO-PHASE FLOW
***Junichi Matsumoto**, Guoming Ling, Hiroki Hanazawa, Kazuo Kashiyama*

Thursday, June 9 **Room 3**
17:00-19:00

MS 603 - 2: COMPUTATIONAL METHODS IN FLUID-STRUCTURE INTERACTION WITH IMPACT ON INDUSTRIAL APPLICATIONS

MS Organizers: Elisabeth Longatte, Yannick Hoarau, Marianna Braza
Chair: Elisabeth Longatte, Yannick Hoarau, Marianna Braza

11189 AN ELECTRO-MECHANICAL COUPLED MODEL FOR FLUID STRUCTURES INTERACTION SIMULATIONS OF PIEZOELECTRIC ACTUATORS
***Vinh-Tan Nguyen**, Jason Leong, Pankaj Kumar*

12287 INVESTIGATING THE POTENTIAL FOR FLOW CONTROL VIA AN ARRAY OF FLEXIBLE FLAPS USING LATTICE BOLTZMANN METHOD
Alistair Revell

7206 A MESH MORPHING BASED FSI METHOD USED IN AERONAUTICAL OPTIMIZATION APPLICATIONS
***Matej Andrejašič**, David Eržen, Emiliano Costa, Stefano Porziani, Marco Evangelos Biancolini, Corrado Groth*

7333 AN ADAPTIVE, RESIDUAL BASED SPLITTING APPROACH FOR THE TIME DEPENDENT PENALIZED NAVIER STOKES EQUATIONS
***Léo Nouveau**, Héloïse Beaugendre, Mario Ricchiuto, Cécile Dobrzynski, Rémi Abgrall*

Thursday, June 9 **Room 4**
17:00-19:00

CS 320: GRID GENERATION AND ADAPTIVE TECHNIQUES

Chair: Esther Andrés-Pérez

5574 A LAPLACIAN MESH DEFORMATION TECHNIQUE FOR SIMULATION-DRIVEN DESIGN OPTIMIZATION
*Mario J. Martin-Burgos, Daniel González-Juárez, **Esther Andrés-Pérez***

6783 ADJOINT BASED AND SPURIOUS DRAG BASED MESH REFINEMENT FOR COMPRESSIBLE FLOW SIMULATION
***Jacques Peter**, Antoine Dumont*

8256 AN INTEGRATED FRAMEWORK FOR WRAPPING AND MESH GENERATION OF COMPLEX GEOMETRIES
***David Martineau**, Jeremy Gould, Jacques Papper*

4889 A STABLE AND CONSERVATIVE TIME-DEPENDENT INTERFACE FORMULATION ON SUMMATION-BY-PARTS FORM: AN INITIAL INVESTIGATION
***Samira Nikkar**, Jan Nordström*

8917 2-D GRID ADAPTATION FOR COMPRESSIBLE FLOWS USING A COMBINATION OF PRESSURE AND PSEUDO-ENTROPY GRADIENTS
***Vijay Ram R**, Shashank Subramanian, Santanu Ghosh*

Thursday, June 9 **Room 5**
17:00-19:00

MS 912 - 2: HIGH-ORDER METHODS, SENSITIVITY ANALYSIS AND ADAPTATION FOR THE NAVIER STOKES EQUATIONS

MS Organizers: Vincent Couaillier, Rémi Abgrall, Eusebio Valero
Chair: Eusebio Valero

8628 LARGE EDDY SIMULATION OF TURBULENCE WITH LOCAL ADAPTATIVE DISCONTINUOUS GALERKIN METHOD
*Göktürk Kuru, Marta de la Llave Plata, **Vincent Couaillier**, Rémi Abgrall, Frédéric Coquel*

8545 IMPLEMENTATION OF A LOW-MACH NUMBER MODIFICATION FOR HIGH-ORDER FINITE-VOLUME SCHEMES FOR ARBITRARY HYBRID UNSTRUCTURED MESHES
***Nicholas Simmonds**, Panagiotis Tsoutsanis, Adrian Gaylard*

8544 ADAPTIVE MESH REFINEMENT TECHNIQUES FOR HIGH-ORDER FINITE-VOLUME WENO SCHEME
***Srinivasan Harshavardhana**, Panagiotis Tsoutsanis*

6681 AN EFFICIENT AVATAR OF THE HIGH-ORDER RBC SCHEMES FOR UNSTEADY COMPRESSIBLE FLOWS
Alain Lerat

6299 IMPLICIT LARGE EDDY SIMULATIONS USING AN INCOMPRESSIBLE HIGH ORDER DISCONTINUOUS GALERKIN METHOD WITH SLIDING MESHES
Esteban Ferrer

Thursday, June 9 **Room 7**
17:00-19:00

MS 1225 - 2: SEISMIC PERFORMANCE ASSESSMENT OF STRUCTURES AND SEISMIC RISK MITIGATION STRATEGIES

MS Organizers: Marco Vona
Chair: Marco Vona

10806 SEISMIC VULNERABILITY OF URBAN AREAS: A CASE-STUDY
*Giorgio Lacanna, **Pauline Deguy**, Maurizio Ripepe, Massimo Coli, Barbara Paoletti, Marco Tanganelli, Stefania Viti, Mario De Stefano*

11553 SPO2FRAG V1.0: SOFTWARE FOR PUSHOVER-BASED DERIVATION OF SEISMIC FRAGILITY CURVES
*Iunio Iervolino, **Georgios Baltzopoulos**, Dimitrios Vamvatsikos, Roberto Baraschino*

12116 REASSESS V1.0: A COMPUTATIONALLY-EFFICIENT SOFTWARE FOR PROBABILISTIC SEISMIC HAZARD ANALYSIS
*Iunio Iervolino, **Eugenio Chioccarelli**, Pasquale Cito*

16427 SIMPLIFIED PERIOD ESTIMATION OF ITALIAN RC BRIDGES FOR LARGE-SCALE SEISMIC ASSESSMENT
*C. Zelaschi, **R. Monteiro**, R. Pinho*

MS 1213: INNOVATIVE STRUCTURAL SYSTEMS FOR SEISMIC RESISTANT BUILDINGS
MS Organizers: Carlo Castiglioni
Chair: Francesco Morelli, Nikolaos Bakas

9178 NONLINEAR ANALYSIS AND EXPERIMENTAL BEHAVIOUR OF AN INNOVATIVE STEEL FRAME WITH REINFORCED CONCRETE INFILL WALLS
*Andrea Dall'Asta, Graziano Leoni, Francesco Morelli, Walter Salvatore, **Alessandro Zona***

10790 MODAL PROPERTIES AND SEISMIC RESPONSE OF EXISTING BUILDING RETROFITTED BY EXTERNAL BRACINGS WITH VISCOUS DAMPERS
***Laura Gioiella**, Enrico Tubaldi, Fabrizio Gara, Andrea Dall'Asta*

Thursday, June 9 Room 8
17:00-19:00

MS 1304 - 1: STOCHASTIC MODELING AND IDENTIFICATION OF UNCERTAINTIES IN COMPUTATIONAL MECHANICS
MS Organizers: Johann Guilleminot, Maarten Arnst, Christian Soize
Chair: Christian Soize

8833 **KEYNOTE:** SENSITIVITY ANALYSIS OF PARAMETRIC UNCERTAINTIES AND MODELING ERRORS IN GENERALIZED PROBABILISTIC MODELING
Maarten Arnst

8373 BAYESIAN IDENTIFICATION OF IRREVERSIBLE MATERIAL MODELS
***Bojana Rosic**, Muhammad Sadiq Sarfaraz, Hermann G. Matthies*

12207 A MULTISCALE FRAMEWORK FOR THE STOCHASTIC ASSIMILATION AND MODELING OF UNCERTAINTY ASSOCIATED NCF COMPOSITE MATERIALS
***Loujaine Mehrez**, Roger Ghanem, Colin McAuliffe, William R. Rodgers, Venkat Aitharaju*

11073 STOCHASTIC COARSE-GRAINING OF AMORPHOUS SOLIDS – FROM MOLECULAR DYNAMICS TO CONTINUUM MECHANICS
***Michael Shields**, Adam Hinkle, Dihui Ruan, Michael Falk, Chris Rycroft*

4618 STOCHASTIC MODELING OF HYPERELASTIC MATERIALS WITH UNCERTAINTIES
***Brian Staber**, Johann Guilleminot*

Thursday, June 9 Room 9
17:00-19:20

MS 605: FRICTIONAL CONTACTS WITH LUBRICATION – BASICS AND APPLICATIONS
MS Organizers: Michael Müller, Thomas Hagemann
Chair: Michael Müller, Thomas Hagemann

6627 STUDIES TOWARDS PARTIALLY FILLED GAPS IN ELASTO-HYDRODYNAMIC SYSTEMS
***Michael Mueller**, Georg-Peter Ostermeyer*

7559 SIMULATION OF DRAG AND CHURNING LOSSES ON TAPERED ROLLER BEARINGS
Xiaojiang Si, Hubert Schwarze, Jürgen Liebrecht, Bernd Sauer

10341 APPLICATION OF MODEL ORDER REDUCTION TECHNIQUES TO THE IMPACT OF AN ELASTIC BODY ON A LUBRICATED PLATE
***Jan Henrik Schmidt**, Sergey Solovyev, Wolfgang Seemann*

11349 THE INFLUENCE OF MANUFACTURING TOLERANCES ON THE PERFORMANCE OF FLUID FILM THRUST BEARINGS
***Michał Wasilczuk**, Christos Papadopoulos, Loukas Zoupas, Vassilis Zouzoulas, Michał Wodtke*

7767 A THEORETICAL AND EXPERIMENTAL STUDY ON MODIFIED SURFACE-MICROSTRUCTURES IN A HIGHLY LOADED CAM-TAPPET CONTACT SYSTEM
***Jan-Dirk Gerken**, Gunther Brenner, Hubert Schwarze*

9225 LIMITING SHEAR STRESS FORMULATION FOR TEHL SIMULATION
***Thomas Lohner**, Klaus Michaelis, Johann-Paul Stemplinger, Karsten Stahl*

7855 MODELING OF TRANSIENT FRICTION IN RUNNING-IN PROCESS UNDER MIXED LUBRICATION CONDITIONS
*Yazhao Zhang, **Yonggang Meng***

Thursday, June 9 Room 10
17:00-19:00

MS 715 - 2: COMPUTATIONAL ANALYSIS OF COMPOSITE STRUCTURES
MS Organizers: Efstathios E. Theotokoglou
Chair: Efstathios E. Theotokoglou

7001 **KEYNOTE:** A NUMERICAL STUDY FOR THE BUCKLING CAPACITY OF WIND TURBINE BLADES: GEOMETRY, LOADING AND MATERIAL INFLUENCE
***Efstathios E. Theotokoglou**, George A. Balokas, Evgenia K. Savvaki*

5840 MODELING OF FIBER-REINFORCED PLASTICS TAKING INTO ACCOUNT THE MANUFACTURING PROCESS
***Cherry Ann Reclusado**, Sumito Nagasawa*

11074 FEA OF FOAM CORE SANDWICH FOOTBRIDGE BASED IN 6-PARAMETER SHELL THEORY
Bartosz Sobczyk

7677 RANKING SCIENTISTS
***J. F. F. Mendes**, S. N. Dorogovtsev*

Thursday, June 9 Room 11
17:00-19:00

MS 712 - 2: SMART MATERIAL SYSTEMS AND STRUCTURES
MS Organizers: Mieczysław Kuczma, Pavel Krejči, Jörg Schröder, Georgios E. Stavroulakis, Gwidon Szefer
Chair: Jörg Schröder, Georgios E. Stavroulakis

10899 A THERMODYNAMICALLY CONSISTENT FINITE STRAIN MICRO-SPHERE FRAMEWORK FOR PHASE-TRANSFORMATION
***Richard Ostwald**, Thorsten Bartel, Andreas Menzel*

9869 SIMULATION OF LOW-CYCLE FATIGUE IN FERROELECTRIC MESOSTRUCTURE
***Sergii Kozinov**, Meinhard Kuna*

6510 ACCURATE SIMULATION OF ACOUSTO-MAGNETO-MECHANICAL SYSTEMS USING HP FINITE ELEMENTS WITH APPLICATION TO MRI COIL DESIGN
***Scott Bagwell**, P.D. Ledger, A.J. Gil*

9157 MULTISCALE COMPUTATIONAL CHARACTERIZATION OF SOFT SOLIDS WITH MAGNETO-ELECTRO-MECHANICAL COUPLING
***Marc-Andre Keip**, Matthias Rambausek, Christian Miehe*

11133 COMPOSITE STRUCTURAL ELEMENTS WITH EMBEDDED SHAPE MEMORY ALLOYS
***Mieczysław Kuczma**, Bożena Kuczma*

Thursday, June 9 **Room 12**
17:00-19:20

MS 611: ADVANCES IN IMMERSED METHODS IN FSI PROBLEMS
MS Organizers: Elie Hachem, Ramon Codina
Chair: Elie Hachem

10268 ENERGY CONSERVATION ANALYSIS OF A FAMILY OF EMBEDDED BOUNDARY METHODS FOR MULTI-MATERIAL FLOW AND FLUID-STRUCTURE INTERACTION PROBLEMS
***Zhengyu Huang**, Charbel Farhat*

9970 A POROUS FLOW BASED MODEL FOR ROUGH SURFACE CONTACT IN FLUID-STRUCTURE INTERACTION
***Christoph Ager**, Anh-Tu Vuong, Benedikt Schott, Alexander Popp, Wolfgang A. Wall*

7587 A HIGH-PERFORMANCE IMMERSED METHODOLOGY FOR PARTICULATE FLOW PROBLEMS
***Hugo Casquero**, Carles Bona-Casas, Hector Gomez*

10768 A MIXED STRAIN/DISPLACEMENT FINITE ELEMENT FORMULATION FOR COUPLED CFD/CSD BLAST AND IMPACT PROBLEMS
***Orlando Soto**, Joseph Baum, Rainald Lohner*

10970 HIGH FIDELITY ADAPTIVE MESHING FOR IMMERSED METHODS
***Thomas Toulorge**, Youssef Mesri, Elie Hachem*

9260 DIRECT FEM UNIFIED CONTINUUM MODELING OF MULTIPHASE TURBULENT FLUID-STRUCTURE INTERACTION WITH A FIXED MESH
***Johan Jansson**, Johan Hoffman*

9307 IMMERSED METHODS FOR COMPRESSION MOULDING OF AUTOMOTIVE STRUCTURAL PIECES
***Patrice Laure**, Luis-Fernando Salazar Betancourt, Luisa Silva, Thierry Coupez*

Thursday, June 9 **Room 15**
17:00-19:00

MS 1004: AERODYNAMIC STRATEGIES FOR THE GLOBAL OPTIMIZATION OF FLYING CONFIGURATIONS IN SUPERSONIC FLOW
MS Organizers: Adriana Nastase, Catalin Nae
Chair: Adriana Nastase, Catalin Nae

9477 GLOBAL OPTIMIZATION OF THE SHAPE OF AN AEROSPACE VEHICLE, VIA ITERATIVE OPTIMUM-OPTIMORUM STRATEGY
Adriana Nastase

6858 CRITICAL EVALUATION FOR DESIGN DECISION FOR A TAILLESS SUPERSONIC AIRCRAFT CONFIGURATION
Catalin Nae

9081 DEVELOPMENT OF PHYSICAL METHODS OF THE SUPERSONIC AIRPLANE NEAR-FIELD INVESTIGATION AIMED AT THE SONIC BOOM MINIMIZATION
*Sergey Chernyshev, **Alexander Ivanov**, Andrey Kiselev, Vladimir Mosharov, Leonid Teperin*

6847 LOW BOOM / LOW DRAG SMALL SIZE SUPERSONIC AIRCRAFT DESIGN
***Atsushi Ueno**, Yasushi Watanabe, Itham Salah El Din, Richard Grenon, Gerald Carrier*

Thursday, June 9 **Room 17**
17:00-19:00

MS 1221: COMPUTATIONAL STRUCTURAL STABILITY
MS Organizers: Herbert A. Mang, Yeon-Bin Yang
Chair: Herbert A. Mang

10115 **KEYNOTE:** ON THE CORRELATION OF THE PERCENTAGE BENDING ENERGY AND THE NONLINEARITY OF PREBUCKLING PATHS
*Stefan Pavlicek, Xin Jia, **Herbert A. Mang***

8485 COMPUTATIONAL ANALYSIS OF THE COLLAPSE BEHAVIOUR OF THIN-WALLED POLYGONAL STEEL BEAMS
Raffaele Ardito

7511 MIXED SOLID MODELS IN NUMERICAL ANALYSIS OF SLENDER STRUCTURES.
***Domenico Magisano**, Leonardo Leonetti, Giovanni Garcea*

10548 ULTIMATE STRENGTH ANALYSIS OF STIFFENED PANELS OF SHIP STRUCTURES UNDER COMBINED LOAD
*Li Hong, **Meng Linghua**, Qin Zhongwen, Zhang Enguo, Li Li*

9538 INFLUENCE OF STRAIN DEFINITIONS ON TRUSSES CRITICAL LOADS
***Reyolando Brasil**, Jose Balthazar*

Thursday, June 9 **Room 20**
17:00-19:00

MS 905 - 4: DISCONTINUOUS GALERKIN METHODS: NEW TRENDS AND APPLICATIONS
MS Organizers: Sonia Fernández-Méndez, Nicoletta Franchina
Chair: Sonia Fernández-Méndez, Nicoletta Franchina

4658 EXTENDED HYBRIDIZABLE DISCONTINUOUS GALERKIN (X-HDG) FOR VOID PROBLEMS
*Ceren Gürkan, **Sonia Fernández-Méndez**, Esther Sala-Lardies, Martin Kronbichler*

7289 A STUDY OF MULTIGRID SMOOTHERS USED IN COMPRESSIBLE CFD BASED ON THE CONVECTION DIFFUSION EQUATION
***Philipp Birken**, Jonathan Bull, Antony Jameson*

6971 DISCONTINUOUS GALERKIN SOLUTION OF THE REYNOLDS-AVERAGED NAVIER–STOKES AND KL-KT-LOG(W) TRANSITION MODEL EQUATIONS
***Antonio Ghidoni**, Marco Lorini, Gianmaria Noventa, Francesco Bassi, Alessandro Colombo*

6227 UNFITTED DISCONTINUOUS GALERKIN METHODS APPLIED TO A PHASE FIELD SIMULATION OF FLUID FILLED FRACTURES
*Christian Engwer, **Liesel Schumacher***

6779 ENTROPY STABLE DISCONTINUOUS GALERKIN SCHEME FOR SYSTEMS OF CONVECTION-DIFFUSION
***Mohammad Zakerzadeh**, Georg May*

9400 CONSERVATION PROPERTIES OF HIGH-ORDER FLUX-RECONSTRUCTION SCHEMES IN SPLIT FORMS
*Issei Morinaka, **Yoshiaki Abe**, Takanori Haga, Taku Nonomura, Koji Miyaji*

Thursday, June 9 **Room 21**
17:00-19:00

MS 910 - 1: HIGH ORDER CFD METHODS: CONCLUSIONS AND OUTLOOK

MS Organizers: Koen Hillewaert, John Ekaterinaris, Peter Vincent, Norbert Kroll, Norbert Huynh, Z.J. Wang

Chair: Norbert Kroll

8170 DEVELOPMENT OF A DISCONTINUOUS GALERKIN METHOD SOLVER FOR SCALE-RESOLVING SIMULATIONS
***Koen Hillewaert**, Jean-Sébastien Cagnone, Ariane Frère, Michel Rasquin, Zafer Zeren*

10180 HIGH-FIDELITY SIMULATION OF UNSTEADY FLOW PROBLEMS USING A 3RD ORDER HYBRID MUSCL/CD SCHEME
***Alastair West**, Doru Caraeni*

8755 A DISCONTINUOUS GALERKIN SPECTRAL ELEMENT FRAMEWORK FOR THE SIMULATION OF TURBULENT FLOWS
***Andrea Beck**, Thomas Bolemann, David Flad, Hannes Frank, Nico Krais, Claus-Dieter Munz*

9171 NON-INTRUSIVE STEADY STATE INVISCID, LAMINAR, AND RANS VERIFICATION CASES FOR CFD CODES
***Marshall Galbraith**, Carl Ollivier-Gooch*

9108 SUMMARY OF 4TH HIGH-ORDER WORKSHOP CASE BI3 - INVISCID BOW SHOCK
Scott Murman

Thursday, June 9 **Room 22**
17:00-19:00

MS 1103 - 2: MATHEMATICAL SURROGATE MODELLING IN ELECTROMAGNETICS

MS Organizers: Petrie Meyer, Tom Dhaene, Dirk Deschrijver

Chair: Petrie Meyer, Tom Dhaene

6044 ON THE USE OF S-PARAMETER TRANSFORMATIONS TO IMPROVE SURROGATE MODEL BEHAVIOUR OF MULTIPORT NETWORKS
Petrie Meyer

11613 ON THE ELECTROMAGNETIC DESIGN OF A HORN AND ORTHOGONAL MODE TRANSDUCER FOR THE SKA BAND 2 FEED WITH HIGH-FIDELITY PERFORMANCE
Robert Lehmensiek

6166 RECENT ADVANCES IN SURROGATE MODELLING OF REFLECTOR ANTENNA SYSTEMS
Dirk De Villiers

8058 ACCELERATION OF MESH-BASED PHYSICAL OPTICS FOR ELECTROMAGNETIC SCATTERING ANALYSIS
Dao P. Xiang, ***Matthys M. Botha***

8246 KRIGING SURROGATE MODELS FOR ZERO-POLE OPTIMIZATION OF MICROWAVE FILTERS
***Natalia Leszczynska**, Selvakumar Ulaganathan, Adam Lamecki, Tom Dhaene, Michal Mrozowski*

7849 SURROGATE MODELING OF ANTENNA RADIATION CHARACTERISTICS BY GAUSSIAN PROCESSES
***Jan Jacobs**, Dirk de Villiers*

Thursday, June 9 **Room 23**
17:00-19:00

MS 1009 - 7: ADJOINT METHODS FOR STEADY & UNSTEADY OPTIMIZATION

MS Organizers: Kyriakos C. Giannakoglou, Jens Dominik Mueller

Chair: Jens Dominik Mueller

6478 CAD BASED PARAMETERIZATION AND CONSTRAINTS FOR ADJOINT OPTIMIZATION
***Marios Damigos**, Eugene de Villiers, Paolo Geremia*

6744 ALTERNATIVE SOLUTION ALGORITHMS FOR PRIMAL AND ADJOINT INCOMPRESSIBLE NAVIER-STOKES
***Mattia Oriani**, Guillaume Pierrot*

6763 FINITE TRANSFORMATION RIGID MOTION MESH MORPHER
***George Eleftheriou**, Athanasios Liatsikouras, Gabriel Fougeron, Guillaume Pierrot*

9809 TOWARDS MULTIDISCIPLINARY ADJOINT OPTIMIZATION OF TURBOMACHINERY COMPONENTS
***Marc Schwalbach**, Tom Verstraete*

6192 LINKING PARAMETRIC CAD WITH ADJOINT SURFACE SENSITIVITIES
Ilias Vasilopoulos, ***Dheeraj Agarwal**, Marcus Meyer, Trevor T. Robinson, Cecil G. Armstrong*

TECHNICAL SESSIONS

Friday, June 10 **Zeus East**
9:00-11:00

MS 403 - 5: PARTICLE-BASED METHODS IN FLUID MECHANICS

MS Organizers: Sergio Idelsohn, Eugenio Oñate
Chair: Pablo Agustín Becker, Chengfeng Li

10397 STUDY OF COMPRESSIBLE FILTER CAKE FORMATION USING DEM-CFD SIMULATION
***Ruturaj Deshpande**, Sergiy Antonyuk, Iliev Oleg*

10787 COUPLED CFD/DEM MULTIPHASE SIMULATION OF A BOTTOM-SPRAY WURSTER COATER USING A HYBRID CPU/GPU APPROACH
*Eva Siegmann, **Matej Zadravec**, Charles Radeke, Johannes Khinast*

11618 INVESTIGATING SOLID-FLUID TRANSITION IN GRANULAR MATERIALS BY MEANS OF NUMERICAL SIMULATIONS
***Dalila Vescovi**, Stefan Luding*

5232 SHOCK WAVES CALCULATED USING MATERIAL POINT METHODS
***Duan Zhang**, Tilak Dhakal*

6460 ADVANCES IN MODELLING INDUSTRIAL FORMING PROCESSES USING THE PARTICLE FINITE ELEMENT METHOD (PFEM)
***Josep Maria Carbonell**, Eugenio Onate, Javier Oliver*

7646 A PROPOSAL OF A GRANULAR FLOW CONSTITUTIVE MODEL FOR MODELING THE SOLID/GRANULAR MATERIAL INTERACTION
***César Dávalos**, Juan Carlos Cante, Abraham Leonel López*

Friday, June 10 **Minos East**
9:00-11:00

MS 602 - 4: INNOVATIVE METHODS FOR FLUID-STRUCTURE-INTERACTION

MS Organizers: E. Harald van Brummelen, Roger Ohayon, Trond Kvamsdal
Chair: E. Harald van Brummelen

10911 ON PARTITIONED SOLUTION SCHEMES
***Wulf Dettmer**, Chennakesava Kadapa, Djordje Peric*

11277 IMMERSED VARIATIONAL MULTISCALE FINITE ELEMENT METHOD FOR HIGH REYNOLDS NUMBER FLOWS
*Fehmi Cirak, **Qiaoling Zhang***

11974 THE NONLINEAR BEHAVIOR OF A COUPLED PISTON–FLUID SYSTEM SUBJECTED TO VIBRATIONAL ACCELERATION
***Jonathan Clausen**, John Torczynski, Tim O'Hern*

7479 IMPLICIT BOUNDARIES WITH MESH ADAPTATION FOR LIQUID-SOLID-GAS INTERACTIONS AND APPLICATION TO INDUSTRIAL JET WIPING SIMULATION
***Zineb Hassani**, Luisa Silva, Simon Santoso, Marc Anderhuber, Pascal Gardin, Thierry Coupez*

7495 CONVERGENCE ANALYSIS OF COUPLING ITERATIONS FOR THE UNSTEADY TRANSMISSION PROBLEM WITH MIXED DISCRETIZATIONS
***Azahar Monge**, Philipp Birken*

Friday, June 10 **Minos North**
9:00-11:00

MS 922 - 1: HIGH-ORDER METHODS FOR ELASTIC WAVES AND THEIR APPLICATION

MS Organizers: Thomas Hagstrom, Daniel Appelo
Chair: Daniel Appelo

5484 **KEYNOTE:** OPTIMAL RADIATION BOUNDARY CONDITIONS AND ABSORBING LAYERS FOR ELASTIC WAVES
***Thomas Hagstrom**, John Lagrone, Daniel Appelo*

5429 THE DOUBLE ABSORBING BOUNDARY (DAB) METHOD FOR HETEROGENEOUS AND ANISOTROPIC ELASTIC MEDIA
***Dan Givoli**, Thomas Hagstrom, Jacobo Bielak, Daniel Rabinovich*

6643 ACCELERATING DISCONTINUOUS GALERKIN METHODS FOR ELASTIC WAVE PROPAGATION
***Timothy Warburton**, Jesse Chan, Axel Modave, Arturo Vargas, Zheng Wang*

5110 GALERKIN DIFFERENCE METHODS FOR WAVE PROPAGATION
***Jeffrrey W. Banks**, T. Hagstrom, J. Jacangelo*

11578 ENERGY STABLE HIGH ORDER FINITE DIFFERENCE METHODS ON STAGGERED GRIDS: AN INITIAL INVESTIGATION
***Ossian O'Reilly**, Tomas Lundquist, Jan Nordström*

Friday, June 10 **Europa**
9:00-11:00

CS 630 - 5: SIMULATION OF FLUID-STRUCTURE INTERACTION

Chair: Nikolai Kornev

10854 CFD SIMULATION OF THERMO- AERODYNAMIC INTERACTION IN A SYSTEM HUMANCLOTH-ENVIRONMENT UNDER VERY LOW TEMPERATURE AND WIND CONDITIONS
*Irina Cherunova, Sina Samarbaksch, **Nikolai Kornev***

6891 ASSESSING THE EFFECT OF THE TEMPORAL DYNAMICS OF A DBD ACTUATOR ON THE INDUCED IONIC WIND PROFILE: RECONCILING EXPERIMENTAL AND NUMERICAL RESULTS.
***Guillaume Dufour**, Francois Rogier*

10607 COUPLING ATOMISTIC MODELS WITH CONTINUOUS FINITE BEAM ELEMENTS
***Florian Niederhöfer**, Jens Wackerfuß*

8094 A 3D FINITE ELEMENT COUPLING MODEL TO STUDY THE EFFECT OF MECHANICALLY-INDUCED CRACKS ON THE SERVICE LIFE PREDICTION OF RC STRUCTURE
***Mohammed Naji Hammood**, Nathan Benkemoun, Ouali Amiri*

MS 411: NON-NEWTONIAN HEAT AND FLUID FLOW SUBJECTED TO MAGNETIC FORCES

MS Organizers: Laszlo Konozsy, Dimitris Drikakis
Chair: Laszlo Konozsy

9372 VALIDATION OF A MAGNETO- AND FERRO-HYDRODYNAMIC MODEL FOR NON-ISOTHERMAL FLOWS IN CONJUNCTION WITH NEWTONIAN AND NON-NEWTONIAN FLUIDS
***László Könözsy**, Pietro Scienza, Dimitris Drikakis*

9717 NUMERICAL STUDY OF MAGNETIC PARTICLES CONCENTRATION IN BIOFLUID (BLOOD) UNDER THE INFLUENCE OF HIGH GRADIENT MAGNETIC FIELD IN MICROCHANNEL
***Vassilios Loukopoulos**, George Bourantas, Dimitrios Labropoulos, Vassilios-Martin Nikiforidis, Stéphane Bordas, George Nikiforidis*

Friday, June 10 **Leda**
9:00-11:00

MS 202 - 2: CIVIL ENGINEERING MATERIALS AND STRUCTURES UNDER EXTREME LOADINGS

MS Organizers: Fabrice Gatuingt, Frédéric Dufour, Panagiotis Kotronis
Chair: Panagiotis Kotronis

7381 A NEW METHOD FOR FATIGUE LIFE PREDICTION BASED ON THE THICK LEVEL SET APPROACH
***L.O. Voormeeren**, F.P. van der Meer, J. Maljaars, L.J. Sluys*

8463 MODELLING STRATEGIES OF PRESTRESSING TENDONS AND REINFORCEMENT BARS IN CONCRETE STRUCTURES
***Antoine Llau**, Ludovic Jason, Frédéric Dufour, Julien Baroth*

6550 NUMERICAL EFFICIENCY OF NON-DIFFERENTIABLE CONSTITUTIVE LAW: APPLICATION TO MAZARS UNILATERAL DAMAGE MODEL.
***Johanes Chandra**, Frédéric Dufour, Stéphane Grange*

7074 A MESH-INDEPENDENT DAMAGE-PLASTICITY MODEL FOR THE CHARACTERIZATION OF CERAMICS IN BALLISTIC PROTECTION
***Erik Cornelis Simons**, Jaap Weerheijm, Lambertus Johannes Sluys*

9863 EVALUATION OF THE LEAKAGE RATE THROUGH A THICK CONCRETE WALL UNDER HIGH PRESSURE AND SEVERE HYGROTHERMAL CONDITIONS.
***Marina Bottoni**, Sylvie Michel-Ponnelle*

Friday, June 10 **Athena**
9:00-11:00

MS 606 - 2: COMPUTATIONAL MODELING OF HYDRAULIC FRACTURING

MS Organizers: Gianluca Cusatis, Gilles Pijaudier-Cabot, Günther Meschke
Chair: David Grégoire

7126 HYDRAULIC FRACTURING SIMULATIONS WITH UNIVERSAL MESHES
***Mostafa Mollaali**, Yongxing Shen*

7507 AN X-FEM BASED MODEL FOR HYDRAULIC FRACTURING
***Ernst Remij**, Joris Remmers, Jacques Huyghe, David Smeulders*

8721 AN ADAPTIVE PHASE-FIELD METHOD FOR NUMERICAL ANALYSIS OF HYDRAULIC STIMULATION IN INTACT AND FRACTURED ROCKS
***Ildar Khisamitov**, Seyed Mohseni, Günther Meschke*

8724 COMPUTATIONAL HOMOGENIZATION AND ORDER REDUCTION IN FRACTURED POROELASTIC MEDIA
***Ralf Jänicke**, Fredrik Larsson, Kenneth Runesson, Holger Steeb*

9002 IMPACT OF THE PROPAGATION ALGORITHM ON THE CONVERGENCE RATE OF HYDRAULIC FRACTURING SIMULATOR TO REFERENCE SOLUTIONS
***Brice Lecampion**, Fatima-Ezzarha Moukhtari*

9089 A FINITE CELL APPROACH TO MODELING PRESSURE-INDUCED PHASE FIELD FRACTURES
***Nitish Singh**, Clemens van Verhoosel, Harald van Brummelen*

Friday, June 10 **Aphrodite**
9:00-11:00

MS 805 - 1: ADVANCED MULTI-PHYSICS AND MULTI-SCALE TECHNIQUES FOR MODELING INELASTIC PROCESSES IN SOLIDS: DAMAGE, FRACTURE AND CONTACT MECHANICS

MS Organizers: Mauro Corrado, Marco Paggi, José Reinoso
Chair: Marco Paggi

11982 NON-PERIODIC REPRESENTATION OF MICROSTRUCTURES BY MEANS OF WANG TILES: LEVEL-SET BASED DESIGN
***Martin Doškář**, Jan Novák, Jan Zeman, Bernard Sonon, Thierry Jacques Massart*

7320 PHASEFIELD MODELING OF FRACTURE PROCESSES
***Friedemann Streich**, Christian Hesch*

7326 MIXED VARIATIONAL PRINCIPLE FOR MULTI-FIELD PROBLEMS
***Maik Dittmann**, Christian Hesch*

9187 A VERSATILE MULTISCALE FRAMEWORK FOR THE MECHANICAL SIMULATION OF NONWOVENS
***Alvaro Ridruejo**, Francisca Martínez-Hergueta, Carlos González, Javier LLorca*

9036 MESO-SCALE MODELING OF HYBRID INDUSTRIAL/RECYCLED STEEL FIBER-REINFORCED CONCRETE
***Antonio Caggiano**, Diego Said Schicchi, Guillermo Etse, Enzo Martinelli*

10520 AN INTERFACE MODEL COMPATIBLE WITH THE PHASE FIELD APPROACH FOR BRITTLE FRACTURE
***J. Reinoso**, M. Paggi*

Friday, June 10 **Antigoni**
9:00-11:00

MS 201 - 4: MICROSTRUCTURE-DRIVEN DEFORMATION AND FAILURE IN CRYSTALLINE MATERIALS

MS Organizers: Pilar Ariza, Lucia Nicola, Angelo Simone
Chair: Lucia Nicola

5739 **KEYNOTE:** LARGE-SCALE ELECTRONIC STRUCTURE CALCULATIONS AND STUDIES ON DISLOCATIONS IN ALUMINUM
*Sambit Das, Mrinal Iyer, **Vikram Gavini***

11415 A STABILIZATION TECHNIQUE FOR COUPLED CONVECTION-DIFFUSION-REACTION EQUATIONS
***Hector Hrnandez**, Thierry Massart, Ron Peerlings, Marc Geers*

11742 PREDICTIVE MODELING OF PLASTICITY AND INTERFACIAL DAMAGE IN SUBSTRUCTURED STEELS: APPLICATION TO MARTENSITIC MICROSTRUCTURES
***Francesco Maresca**, Varvara Kouznetsova, Marc Geers*

5761 SIZE EFFECTS AND STOCHASTIC PLASTIC FLOW DURING UNIAXIAL CRYSTAL COMPRESSION: A MINIMAL DISCRETE DISLOCATION MODEL
Stefanos Papanikolaou

7022 MODELING OF FRACTURE IN POLY CRYSTALLINE MATERIALS WITH THE XFEM
***Steffen Beese**, Stefan Loehnert, Peter Wriggers*

Friday, June 10 **Apollo East**
9:00-11:00

MS 713 - 1: MICROSTRUCTURE-BASED MODELLING OF HETEROGENEOUS MATERIALS

MS Organizers: Jan Zeman, Jan Novak, Guillermo Díaz
Chair: Guillermo Díaz

6004 DEPENDENCE OF THE MECHANICAL PROPERTIES OF PENTAMODE MATERIALS ON THE LATTICE MICROSTRUCTURE
Ada Amendola, Francesco Fabbrocino, ***Luciano Feo****, Ferdinando Auricchio, Fernando Fraternali*

11137 QUASICONTINUUM METHOD COMBINED WITH ANISOTROPIC MICROPLANE MODEL
Karel Mikeš*, Milan Jirásek*

7683 STREAMABLE GENERALIZED VORONOI TESSELLATION MODEL FOR TOMOGRAPHIC IMAGES
Christophe Leblanc*, Van Dung Nguyen, Ludovic Noels, Eric Béchet*

10791 ELECTROSTRICTIVE MATERIALS: MODELLING AND SIMULATION
Marco Cisternino*, Angelo Iollo, Lisl Weynans, Annie Colin, Philippe Poulin*

10715 STRATEGIES FOR THE OPTIMIZATION OF COMPUTATIONALLY GENERATED MICROSTRUCTURES IN NANOCRYSTALLINE NI50TI
Manuel Petersmann*, Thomas Antretter, Georges Cailletaud, Thomas Waitz*

11623 HIERARCHICAL FABRICATION OF ORIENTED MATERIALS BASED ON WANG TILES
Václav Nežerka, Michael Somr, Tomáš Janda, Jan Zeman, ***Jan Novák***

Friday, June 10 **Apollo West**
9:00-11:00

MS 205: PROBABILISTIC APPROACH TO NUMERICAL SIMULATION OF FRACTURE

MS Organizers: Alexander V. Gerasimov
Chair: Sergey A. Zelepugin

5235 NUMERICAL SIMULATION OF HIGH-VELOCITY INTERACTION A GROUP OF ELEMENTS WITH THIN-WALLED STRUCTURES
Alexander Gerasimov*, Sergey V. Pashkov*

8052 NUMERICAL SIMULATION OF MULTILAYER COMPOSITES FAILURE UNDER DYNAMIC LOADING
Sergey A. Zelepugin*, Aleksey S. Zelepugin, Vladimir F. Tolkachev*

11079 SIMULATION OF MECHANICAL PROPERTIES OF CERAMIC PARTS PRODUCED BY ADDITIVE TECHNOLOGIES IN WIDE RANGE OF LOADING RATES
Vladimir A. Skripnyak*, Evgeniya Skripnyak, Vladimir V. Skripnyak, Irina K. Vaganova*

11099 FRACTURE OF THIN METAL SHEETS WITH DISTRIBUTION OF GRAIN SIZES IN THE LAYERS
Natalia V. Skripnyak*, Vladimir V. Skripnyak, Vladimir A. Skripnyak*

11114 BRITTLE OR QUASI-BRITTLE FRACTURE OF CERAMIC NANOCOMPOSITES UNDER DYNAMIC LOADING
Evgeniya G. Skripnyak*, Vladimir V. Skripnyak, Vladimir A. Skripnyak, Natalia V. Skripnyak, Irina K. Vaganova*

7987 RELIABILITY OF SYSTEMS EQUIPPED WITH VISCOUS DAMPERS WITH VARIABLE PROPERTIES
Andrea Dall'Asta, Laura Ragni, ***Fabrizio Scozzese****, Enrico Tubaldi*

Friday, June 10 **Room 1**
9:00-11:00

MS 707 - 1: MICROMECHANICAL MODELLING: COMPETITION BETWEEN ANALYTICAL AND NUMERICAL METHODS

MS Organizers: Siegfried Schmauder, Vera Petrova
Chair: Siegfried Schmauder

10631 DEFECT ACCUMULATION IN NANOPOROUS WEAR-RESISTANT COATINGS UNDER COLLECTIVE RECRYSTALLIZATION. SIMULATION BY HYBRID CELLULAR AUTOMATON METHOD
Dmitry Moiseenko*, Pavel Maksimov, Sergey Panin, Viktor Panin*

11376 HYDROGEN ASSISTED CRACKING: ANALYTICAL AND NUMERICAL STUDY
Alla Balueva

9203 INFLUENCE OF MICRO CRACKS ON EFFECTIVE MATERIAL PROPERTIES IN FIBER REINFORCED SMART COMPOSITE MATERIALS
Michael Wünsche*, Jan Sladek, Vladimir Sladek*

10692 PHASE-FIELD MODELING OF CRACK PROPAGATION IN MULTI-PHASE SYSTEMS
Daniel Schneider*, Ephraim Schoof, Yunfei Huang, Michael Selzer, Britta Nestler*

5590 MULTISCALE MODELING OF THERMO-ELASTIC PROPERTIES OF MICROCRACKED MATERIAL
Antonino Favata*, Patrizia Trovalusci, Renato Masiani*

Friday, June 10 **Room 2**
9:00-11:20

MS 1304 - 2: STOCHASTIC MODELING AND IDENTIFICATION OF UNCERTAINTIES IN COMPUTATIONAL MECHANICS

MS Organizers: Johann Guilleminot, Maarten Arnst, Christian Soize
Chair: Maarten Arnst

8024 TO ESTIMATE NON-STATIONARY STOCHASTIC DISTRIBUTED LOAD ON A BEAM STRUCTURE FROM RESPONSE SAMPLES
S.Q. Wu*, J. Zhu*

7152 NONPARAMETRIC POSTERIOR SURROGATES BASED ON SPECTRAL LIKELIHOOD EXPANSIONS AND LEAST ANGLE REGRESSION
Joseph Nagel*, Bruno Sudret*

10618 A LOW-RANK METHOD FOR DIFFUSION EQUATIONS IN RANDOM QUASI-PERIODIC HETEROGENEOUS MEDIA
Quentin Ayoul-Guilmard*, Anthony Nouy, Christophe Binetruy, Sébastien Comas*

6736 MULTILEVEL STOCHASTIC REDUCED-ORDER MODEL IN LINEAR STRUCTURAL DYNAMICS FOR COMPLEX STRUCTURES
Olivier Ezvan*, Anas Batou, Christian Soize*

10222 ANALYSIS OF STOCHASTIC DYNAMIC SOIL-STRUCTURE INTERACTION PROBLEMS BY MEANS OF COUPLED FINITE ELEMENTS-PERFECTLY MATCHED LAYERS
Manthos Papadopoulos*, Stijn François, Geert Degrande, Geert Lombaert*

8487 A ROBUST POLYNOMIAL CHAOS KALMAN FILTER FRAMEWORK FOR CORROSION DETECTION IN REINFORCED CONCRETE STRUCTURES
Wael Slika*, George Saad*

10875 A NEW HOMOGENISATION SCHEME WITH CERTIFIED ACCURACY FOR RANDOM MEDIA
Pierre Kerfriden*, Daniel Alves Paladim*

Friday, June 10 **Room 3**
9:00-11:00

MS 506: ACCURACY AND EFFICIENCY OF APPROXIMATE COMPUTATIONS IN SCIENCE AND ENGINEERING

MS Organizers: Aram Soroushian
Chair: Aram Soroushian

11392 **KEYNOTE:** ON THE EFFECT OF VISCOUS DAMPING ON THE STABILITY OF TIME INTEGRATION METHODS
Aram Soroushian

11470 ON THE PERFORMANCE OF A COMPUTATIONAL COST REDUCTION TECHNIQUE APPLIED TO COOLING TOWERS
***Aram Soroushian**, Amin Jahani Mehrnoosh, Yalda Zarabi Manesh, Mohammad Hadi Ghondaghsaz, Ali Bayani, Ali Zaki Zadeh*

4902 DIRECT TIME-DOMAIN INTEGRATION APPROACH FOR VISCOELASTIC SYSTEMS INVOLVING VARIOUS DAMPING MODELS
***Zhe Ding**, Li Li, Yujin Hu*

10689 PROPOSING AN APPROXIMATE METHOD FOR ESTIMATING THE DEFORMATION CAPACITY OF RC SECTIONS UNDER BIDIRECTIONAL LOADING BASED ON NUMERICAL COMPUTATIONS
***Nahid Attarchian**, Afshin Kalantari, Abdoreza Sarvghad Mogoddam*

12101 A DIFFERENT LOOK AT THE RICHARDSON EXTRAPOLATION LEADING TO A NEW PROPOSITION
Aram Soroushian

12109 ON THE FREQUENCY CONTENT OF ERRORS ORIGINATED IN A TIME INTEGRATION COMPUTATIONAL COST REDUCTION TECHNIQUE
***Aram Soroushian**, Mahmood Hosseini, Seyed Mohammad Khalkhali*

Friday, June 10 **Room 4**
9:00-11:00

MS 1216: STRUCTURAL ANALYSIS AND VIBRATIONS

MS Organizers: Diana V. Bambill, Carlos A. Rossit
Chair: Marios Filippoupolitis

10293 ASYMPTOTIC ANALYSIS OF DEFORMATIONS OF THE SLIGHTLY ORTHOTROPIC SPHERICAL LAYER UNDER NORMAL PRESSURE
***Andrei L. Smirnov**, Svetlana M. Bauer, Liudmila A.Venatovskaia, Eva B .Voronkova*

7718 DYNAMIC STIFFNESS EQUIVALENT MODELING METHOD OF GIANT OPTO-MECHANICAL STRUCTURE
Hu Jie

11638 EXPERIMENTAL VALIDATION OF FINITE ELEMENT MODELS FOR REINFORCED CONCRETE BEAMS WITH AND WITHOUT DISCONTINUITIES
***Marios Filippoupolitis**, Carl Hopkins, Siu-Kui Au*

CS 1202 - 1: STRUCTURAL ANALYSIS AND MULTI BODY DYNAMICS

7648 A COMPARISON OF NUMERICAL METHODS FOR SOLVING MULTIBODY DYNAMICS PROBLEMS WITH FRICTIONAL CONTACT MODELED VIA DIFFERENTIAL VARIATIONAL INEQUALITIES
***Daniel Melanz**, Luning Fang, Dan Negrut*

6012 TRANSFER MATRIX METHOD OF LINEAR MULTIBODY SYSTEMS FOR FREE VIBRATION ANALYSIS OF BEAM CARRYING ELASTICALLY MOUNTED POINT MASSES
***Laith K. Abbas**, Dong Yang Chen, Xiaoting Rui*

Friday, June 10 **Room 5**
9:00-11:00

MS 1010: INVERSE PROBLEMS, DESIGN AND OPTIMIZATION

MS Organizers: Marcelo J. Colaço, Helcio R. B. Orlande, George S. Dulikravich
Chair: Marcelo J. Colaço

6669 PREDICTION OF GASOLINES PERFORMANCE IN INTERNAL COMBUSTION ENGINES USING RBF- AND KRIGING-BASED METAMODELS
*Rogerio Carvalho, Guilherme Machado, **Marcelo Colaco***

8187 APPLICATION OF THE GENERALIZED MINIMAL RESIDUAL METHOD FOR TARGET MAGNETIC FIELD DISTRIBUTION PROCEDURES
*Ben Minnaert, **Nobby Stevens***

6442 HIGH PERFORMANCE INDUSTRIAL FAN OPTIMIZATION
***Jacobus van Rooyen**, Arnaud Malan, Eddie Raad*

6719 OPTIMAL DECOMPOSITION OF HIGH DIMENSIONAL SOLUTION SPACES FOR ROBUST DESIGN.
***Stefan Erschen**, Fabian Duddeck, Markus Zimmermann*

5915 EFFICIENT CALIBRATION OF DISCRETE ELEMENT MATERIAL MODEL PARAMETERS USING LATIN HYPERCUBE SAMPLING AND KRIGING
***Michael Rackl**, Carolin D. Görnig, Kevin J. Hanley, Willibald A. Günthner*

6497 UPDATING PRIOR PARAMETERS BASED ON LIKELIHOOD FUNCTION-BAYESIAN METHOD FOR PARAMETER ESTIMATION AT HIGH MEASUREMENT UNCERTAINTY
*Somasundharam Sankaran, **K Srinivas Reddy***

Friday, June 10 **Room 7**
9:00-11:00

MS 808 - 1: MULTISCALE AND MULTIPHYSICS MODELING OF CEMENTITIOUS MATERIALS

MS Organizers: Jörg F. Unger, Thomas Titscher
Chair: Thomas Titscher

9838 THE BENEFIT OF MESOSCALE MODELS FOR CONCRETE TO UNDERSTAND ITS COMPLEX MACROSCOPIC BEHAVIOR
***Jörg F. Unger**, Volker Hirthammer, Philip Huschke, Peter Otto, Thomas Titscher*

9859 A MESOSCALE, MULTI-PHYSICS, FINITE-ELEMENT-MODEL OF CONCRETE TO PREDICT THE LONG TERM BEHAVIOR
Volker Hirthammer

5933 A MULTI-SCALE TEMPORAL INTEGRATION SCHEME FOR VISCOPLASTIC SOLIDS SUBJECTED TO FATIGUE DETERIORATION
***Vitaliy Kindrachuk**, Jörg F. Unger*

10559 SIMULATION OF LONG-TERM DEFORMATIONS IN FASTENING SYSTEMS: MULTI-PHYSICS FRAMEWORK
***Giannis Boumakis**, Mehran Shahidi, Marco Marcon, Jan Vorel, Roman Wendner*

Friday, June 10 **Room 8**
9:00-11:00

MS 802 - 1: ADVANCES IN THE MODELLING OF MULTI-SCALE, MULTI-PHYSICS AND MULTI-UNCERTAINTY PROBLEMS

MS Organizers: Francisco M. Andrade Pires, Chengfeng Li
Chair: Francisco M. Andrade Pires, Chengfeng Li

10767 HIGHER-ORDER ASYMPTOTIC HOMOGENIZATION OF PERIODIC MATERIALS WITH LOW SCALE SEPARATION
***Maqsood Mohammed Ameen**, R.H.J. Peerlings, M.G.D. Geers*

10301 MULTI-SCALE WEAVE ALGORITHM FOR STATISTICAL RECONSTRUCTION OF HETEROGENEOUS MATERIALS
***Shaoqing Cui**, Chenfeng Li*

5581 ANALYSIS OF YIELD CRITERIA OF POROUS DUCTILE MATERIALS THROUGH COMPUTATIONAL HOMOGENIZATION AT FINITE STRAINS
***R. P. Carvalho**, I. A. R. Lopes, S. H. Wu, F. M. Andrade Pires*

5612 ANALYSIS OF PARALLELIZATION STRATEGIES FOR THE SOLUTION OF HOMOGENIZATION-BASED MULTISCALE MODELS
***Igor André Rodrigues Lopes**, Francisco Manuel Andrade Pires*

5625 THEORETICAL PREDICTION OF PLASTIC INSTABILITY FOR ASYMMETRICAL MATERIALS
***Shenghua Wu**, Nannan Song, F. M. Andrade Pires*

9283 COUPLED VS. STAGGERED SOLUTIONS STRATEGIES FOR ELECTRO-MECHANICS IN THE HEART
*Xiaozhou Li, Marco Favino, Rolf Krause, Simone Pezzuto, **Sonia Pozzi***

Friday, June 10 **Room 9**
9:00-11:00

MS 908 - 1: VERIFICATION AND VALIDATION OF STRUCTURAL MECHANICS SIMULATION MODELS

MS Organizers: George Lampeas
Chair: Athanasios Dafnis

5901 EXPERIMENTAL VALIDATION OF COMPOSITE STRUCTURES IN EXPLICIT DYNAMICS ANALYSIS
***Konstantinos Fotopoulos**, George Lampeas*

7386 EXPERIMENTAL VALIDATION OF A MODEL UPDATE PROCEDURE FOCUSING ON SMALL GEOMETRIC DEVIATIONS
***Thomas Maywald**, Arnold Kühhorn, Sven Schrape*

7362 CODE VERIFICATION IN SHELL ANALYSIS BY THE METHOD OF MANUFACTURED SOLUTIONS
***Michael Gfrerer**, Martin Schanz*

7797 APPLICATION OF METHODS OF MANUFACTURED SOLUTION AND NEARBY PROBLEMS TO NONLINEAR SOLID MECHANICS
Takahiro Yamada

10834 INVESTIGATION IN THE MECHANICAL BEHAVIOUR OF LOW-VELOCITY IMPACTED CFRP PLATES UNDER DIFFERENT BOUNDARY CONDITIONS
*Süleyman Arslan, **Zamaan Sadeghi**, Athanasios Dafnis, Kai-Uwe Schröder*

Friday, June 10 **Room 11**
9:00-11:20

MS 1013: SOLUTION OF LARGE-SCALE INVERSE PROBLEMS

MS Organizers: Clint Dawson, Steve Mattis, Troy Butler, Lindley Graham
Chair: Steve Mattis

10817 MEASURE-THEORETIC PARAMETER ESTIMATION FOR HURRICANE STORM SURGE
***Lindley Graham**, Clint Dawson, Troy Butler*

10870 ERROR ESTIMATION AND CONTROL FOR STOCHASTIC INVERSION OF GROUNDWATER CONTAMINATION PROBLEMS
***Steven Mattis**, Troy Butler, Clint Dawson*

9975 DATA ASSIMILATION USING MRI DATA
***Geir Nævdal**, Ove Sævareid, Rolf J. Lorentzen*

11225 D-OPTIMAL EXPERIMENTAL DESIGN FOR INFINITE-DIMENSIONAL BAYESIAN LINEAR INVERSE PROBLEMS
***Alen Alexanderian**, Arvind K. Saibaba*

12107 ENHANCED ENSEMBLE KALMAN FILTERING WITH ONE-STEP-AHEAD-SMOOTHING
*Boujemaa Ait-El-Fquih, Naila Raboudi, Omar Knio, Clint Dawson, **Ibrahim Hotelt***

12108 BAYESIAN INFERENCE OF SOURCE PARAMETERS FOR THE CHILE 2010 TSUNAMI
*Loic Giraldi, Olivier Le Maitre, Omar Knio, Clint Dawson, Kyle Mandli, **Ibrahim Hoteit***

9517 UNIDENTIFIABILITY OF ILL-POSED INVERSE PROBLEMS
***Velimir Vesselinov**, Dan O'Malley*

Friday, June 10 **Room 12**
9:00-11:00

MS 1211: COMPUTATIONAL STRATEGIES FOR STRUCTURAL ROBUSTNESS ASSESSMENT

MS Organizers: Domenic Asprone, Fulvio Parisi
Chair: Fulvio Parisi

6688 IMPLEMENTATION OF PROGRESSIVE DAMAGE IN FINITE ELEMENT CODES FOR THE ASSESSMENT OF ROBUSNTESS
*Domenico Asprone, Bernardino Chiaia, **Valerio De Biagi**, Gaetano Manfredi, Fulvio Parisi*

5285 PROGRESSIVE COLLAPSE FRAGILITY MODELS OF RC FRAMED BUILDINGS BASED ON PUSHDOWN ANALYSIS
*Emanuele Brunesi, Roberto Nascimbene, **Fulvio Parisi***

4515 ROBUSTNESS OF STRUCTURES CONSTRUCTED WITH INDUSTRIALIZED REINFORCED CONCRETE WALLS
***Rina Farhat**, Nicolae Gluck, Rami Eid*

5566 MECHANICAL PROPERTIES OF S355 UNDER EXTREME COUPLED EFFECT OF HIGH TEMPERATURES AND HIGH STRAIN RATES
***Daniele Forni**, Bernardino Chiaia, Ezio Cadoni*

12309 FINITE ELEMENT ASSESSMENT OF THE COLLAPSE POTENTIAL OF STEEL BEAMS IN FIRE
***Demos Demosthenous**, Dimos C. Charmpis*

16749 SEISMIC RESIDUAL CAPACITY ASSESSMENT OF FRAMED STRUCTURES DAMAGED BY EXCEPTIONAL ACTIONS
*Antonello Formisano, **Giuseppe Iazzetta**, Giuseppe Marino, Francesco Fabbrocino, Raffaele Landolfo*

Friday, June 10 **Room 15**
9:00-11:00

CS 980: NUMERICAL AND SYMBOLIC COMPUTATION
Chair: Hipólito Sousa

9264 CONTRIBUTION OF NUMERICAL THERMAL SIMULATION OF MASONRY TO THE GLOBAL OBJECTIVE OF BUILDINGS ENERGY EFFICIENCY
***Hipólito Sousa**, Rui Sousa, Luís Silva, Gonçalo Sousa*

4906 MODERNIZING SOFTWARE IN SCIENCE AND ENGINEERING: FROM C/C++ APPLICATIONS TO MOBILE PLATFORMS
***Liliana Favre**, Claudia Pereira, Liliana Martinez*

11754 NUMERICAL SIMULATION OF AXISYMMETRIC ELASTICITY PROBLEMS IN SEMI-INFINITE DOMAINS BY A DTN FEM APPROACH
***Eduardo Godoy**, Mario Durán*

8464 NEW EDUCATIONAL MATLAB TOOL TO EXPLAIN TWO DIMENSIONAL FINITE ELEMENT METHOD TO GRADUATE STUDENTS
***Rafet Sisman**, Abdurrahman Sahin*

11259 KOITER ASYMPTOTIC ANALYSIS OF VARIABLE-ANGLE TOW COMPOSITE PLATES
*Antonio Madeo, Giuseppe Zagari, **Giovanni Zucco,** Rainer Groh, Paul Weaver, Raffaele Zinno*

16721 CONNECTING MODELS AND TOOLS FOR DEVELOPING CYBER-PHYSICAL-SYSTEMS – THE INTO-CPS PROJECT
Christian Koenig

Friday, June 10 **Room 17**
9:00-11:00

MS 1311: ADAPTIVE METHODS FOR FORWARD AND INVERSE PROPAGATION OF UNCERTAINTY IN COMPUTATIONAL MODELS
MS Organizers: Timothy M. Wildey, Anca C. Belme
Chair: Anca C. Belme

4739 ADAPTIVE RESPONSE SURFACE APPROXIMATIONS FOR BAYESIAN INFERENCE
***Timothy Wildey**, John Jakeman, Troy Butler*

6307 ADAPTIVE SAMPLE BASED INTEGRATION TECHNIQUES IN INVERSE AND PREDICTION UQ PROBLEMS
***Troy Butler**, Lindley Graham, Steven Mattis, Scott Walsh*

7995 A POSTERIORI ERROR ESTIMATE FOR THE NAVIER-STOKES EQUATIONS IN RANDOM DOMAINS SOLVED WITH A PERTURBATION TECHNIQUE
***Diane Guignard**, Fabio Nobile, Marco Picasso*

8454 GOAL-BASED STOCHASTIC AND DETERMINISTIC ERROR ESTIMATES FOR ADAPTIVE CONTROL IN COMPRESSIBLE CFD PROBLEMS
***Jan Willem Van Langenhove**, Didier Lucor, Anca Belme*

7666 ACCELERATION OF BAYESIAN CALIBRATION FOR PREDICTIVE UNCERTAINTY QUANTIFICATION IN AEROELASTIC FLUTTER
***Christian Thomas Nitschke**, Jean-Camille Chassaing*

11684 DENSITY ESTIMATION FOR A CLASS OF ELLIPTIC PROBLEMS ON STOCHASTICALLY PERTURBED DOMAINS
***Jehanzeb Chaudhry**, Don Estep, Nathanial Burch*

Friday, June 10 **Room 18**
9:00-11:00

MS 804 - 2: MULTISCALE AND COMPUTATIONAL APPROACHES TO FRACTURE AND FAILURE
MS Organizers: Haim Waisman, Caglar Oskay
Chair: Haim Waisman

6596 A NON-LOCAL APPROACH TO LIFE TIME PREDICTION OF CORD-RUBBER COMPOSITE STRUCTURE
***Niraj Kumar Jha**, Udo Nackenhorst, Tobias Helmich, Claudia Lillie*

8312 PREDICTING DUCTILE FRACTURE IN FERROUS AND NONFERROUS METALS DURING UPSET FORGING USING AN ELLIPSOIDAL VOID MODEL
Kazutake Komori

7973 PHASE-FIELD MODELING OF AUTOGENOUS SHRINKAGE IN RESTRAINED CEMENT PASTE
***Jafar Amani Dashlejeh**, Pietro Lura, Jason Weiss, Angelo Simone*

6109 A NEW INTERFACE DAMAGE MODEL FOR MODELING DELAMINATION USING THICK LEVEL SET METHOD
***Mohammad Latifi**, F.P. van der Meer, L.J. Sluys*

7931 ANALYSIS OF A BI-PIEZOELECTRIC CERAMIC LAYER WITH AN INTERFACIAL CRACK SUBJECTED TO IN-PLANE MECHANICAL AND ELECTRICAL LOADING
*Mojtaba Biglar, Magdalena Gromada, Feliks Stachowicz, **Tomasz Trzepiecinski***

Friday, June 10 **Room 20**
9:00-11:00

MS 905 - 5: DISCONTINUOUS GALERKIN METHODS: NEW TRENDS AND APPLICATIONS
MS Organizers: Sonia Fernández-Méndez, Nicoletta Franchina
Chair: Sonia Fernández-Méndez, Nicoletta Franchina

4596 EXTENDED HYBRIDIZABLE DISCONTINUOUS GALERKIN (X-HDG) FOR BIMATERIAL PROBLEMS
***Ceren Gürkan**, Sonia Fernández-Méndez, Esther Sala-Lardies, Martin Kronbichler*

10879 A RECOVERY DISCONTINUOUS GALERKIN METHOD WITH IMPROVED ADVECTION FOR THE COMPRESSIBLE NAVIER-STOKES EQUATIONS
***Philip Johnson**, Eric Johnsen*

7332 A HIGH-PERFORMANCE DISCONTINUOUS GALERKIN SOLVER FOR THE SIMULATION OF INCOMPRESSIBLE TURBULENT FLOW
***Martin Kronbichler**, Benjamin Krank, Niklas Fehn, Wolfgang A. Wall*

5962 A SYMMETRIC INTERIOR PENALTY DISCONTINUOUS GALERKIN METHOD WITH LOCAL TIME STEPPING FOR ANISOTROPIC ELASTICITY PROBLEMS
***Sjoerd Geevers**, Jaap van der Vegt, Wim Mulder*

7192 A STAGGERED ARBITRARY HIGH ORDER SEMI-IMPLICIT DISCONTINUOUS GALERKIN METHOD FOR THE INCOMPRESSIBLE NAVIER-STOKES EQUATIONS
***Maurizio Tavelli**, Michael Dumbser*

7439 ACCURATE MODELING OF LIGHT PROPAGATION THROUGH PHOTONIC CRYSTALS
***Devashish Devashish**, Willem L. Vos, Jaap J W van der Vegt*

Friday, June 10 **Room 21**
9:00-11:00

MS 910 - 2: HIGH ORDER CFD METHODS: CONCLUSIONS AND OUTLOOK

MS Organizers: Koen Hillewaert, John Ekaterinaris, Peter Vincent, Norbert Kroll, Norbert Huynh, Z.J. Wang

Chair: Peter Vincent

9345 **KEYNOTE:** TOWARDS THE INDUSTRIAL ADOPTION OF GPU-ACCELERATED HIGH-ORDER COMPUTATIONAL FLUID DYNAMICS
Peter Vincent

9697 CURVED GRID GENERATION AND DG COMPUTATION FOR THE DLR-F11 HIGH LIFT CONFIGURATION
Ralf Hartmann*, Harlan McMorris, Tobias Leicht*

11139 ON THE IMPLEMENTATION OF X-LES IN A HIGH-ORDER IMPLICIT DG SOLVER
Francesco Bassi, Lorenzo Botti, ***Alessandro Colombo****, Andrea Crivellini, Antonio Ghidoni, Marco Lorini, Francesco Carlo Massa, Gianmaria Noventa*

8042 APPLICATIONS OF HIGH ORDER HYBRID DG/FV SCHEMES ON CURVILINEAR MESHES
Li Ming*, Liu Wei, Zhang Laiping, He Xin*

15373 BS1 : DIRECT NUMERICAL SIMULATION OF THE TAYLOR-GREEN VORTEX AT RE = 1600
Andrea Mastellone*, Luigi Cutrone, Francesco Capuano*

Friday, June 10 **Room 23**
9:00-11:00

MS 1011 - 1: SURROGATE-ASSISTED EVOLUTIONARY ALGORITHMS IN AERODYNAMIC DESIGN/OPTIMIZATION

MS Organizers: Varvara Asouti, Esther Andrés, Emiliano Iuliano

Chair: Varvara Asouti

8857 A NOVEL IMPLEMENTATION OF COMPUTATIONAL AERODYNAMIC SHAPE OPTIMISATION USING MODIFIED CUCKOO SEARCH AND REDUCED ORDER MODELLING
David Stefan Naumann*, Ben Evans, Oubay Hassan*

6765 MULTIOBJECTIVE OPTIMIZATION WITH GAUSSIAN PROCESS FOR DISTRIBUTED COMPUTING
Jonathan Guerra*, Patricia Klotz, Fabrice Gamboa, Patrick Cattiaux, Nicolas Dolin*

8407 ON THE INFLUENCE OF A PRIORI SAMPLING METHODS ON SURROGATE MODELS ACCURACY IN AIRCRAFT AERODYNAMIC DESIGN OPTIMIZATION
Raul Yondo*, Esther Andrés, Eusebio Valero*

9174 MULTI-FIDELITY EXTENSION TO NON-INTRUSIVE PROPER ORTHOGONAL DECOMPOSITION BASED SURROGATES
Tariq Benamara*, Piotr Breitkopf, I. Lepot, Caroline Sainvitu*

11229 THE RBF4AERO BENCHMARK TECHNOLOGY PLATFORM
Massimo Bernaschi, ***Alessandro Sabellico****, Giorgio Urso, Emiliano Costa, Stefano Porziani, Fabrizio Lagasco, Corrado Groth, Ubaldo Cella, Marco Evangelos Biancolini, Dimitrios H.Kapsoulis, Varvara G. Asouti, Kyriakos C. Giannakoglou*

11:00-11:30
Coffee Break

TECHNICAL SESSIONS

Friday, June 10 **Minos East**
11:30-13:30

MS 602 - 5: INNOVATIVE METHODS FOR FLUID-STRUCTURE-INTERACTION

MS Organizers: E. Harald van Brummelen, Roger Ohayon, Trond Kvamsdal
Chair: E. Harald van Brummelen

10051 A FLEXIBLE FLUID STRUCTURE INTERACTION COUPLING SCHEME FOR TIRE APPLICATIONS – INTERFACE ENERGY CONSIDERATIONS
***Julien Gillard**, Vincent Decouvreur, Wolfgang A. Wall*

9110 USING IMPROVED RADIAL BA SIS FUNCTIONS METHODS FOR FLUID-STRUCTURE COUPLING AND MESH DEFORMATION
***Giorgos Strofylas**, Georgios Mazanakis, Sotirios Sarakinos, Georgios Lygidakis, Ioannis Nikolos*

9228 FRAMEWORK FOR FLUID-STRUCTURE INTERACTION WITH CONTACT AND ITS APPLICATIONS IN BIOMECHANICS
*Johan Jansson, Jeannette Spühler, **Niyazi Cem Degirmenci**, Van Dang Nguyen, Johan Hoffman,*

5922 ACOUSTIC ANALYSIS OF FLOW-INDUCED VIBRATIONS OF A FLEXIBLE PLATE MODELING THE SOFT PALATE
***Mohammadtaghi Khalili**, Martin Larsson, Bernhard Müller*

8991 SPLINE-BASED METHODS FOR INTERACTION BETWEEN FREE-SURFACE FLOWS AND ELASTIC STRUCTURES
***Norbert Hosters**, Stefanie Elgeti, Marek Behr*

Friday, June 10 **Minos North**
11:30-13:30

MS 922 - 2: HIGH-ORDER METHODS FOR ELASTIC WAVES AND THEIR APPLICATION

MS Organizers: Thomas Hagstrom, Daniel Appelo
Chair: Thomas Hagstrom

8752 AN ENERGY-BASED DISCONTINUOUS GALERKIN DISCRETIZATION OF THE ELASTIC WAVE EQUATION IN SECOND ORDER FORM
***Daniel Appelo**, Thomas Hagstrom*

16013 DYNAMIC EARTHQUAKE RUPTURE SIMULATIONS ON NONPLANAR FAULTS EMBEDDED IN 3D, HETEROGENEOUS ELASTIC-PLASTIC SOLIDS
Kenneth Duru

5224 WAVE PROPAGATION IN HIGHLY HETEROGENEOUS MEDIA: SCALABILITY OF THE MESH AND RANDOM PROPERTIES GENERATOR
*Jose Camata, Lucio Correa, Luciano Paludo, **Regis Cottereau**, Alvaro Coutinho*

8606 THREE-DIMENSIONAL FULL WAVEFORM INVERSION OF SHORT-PERIOD TELESEISMIC WAVEFIELDS BASED UPON A COUPLED SPECTRAL-ELEMENT METHOD
*Dimitri Komatitsch, **Vadim Monteiller**, Yi Wang, Sébastien Chevrot*

MS 1008: ULTRASONIC GUIDED WAVES TESTING AND MONITORING

MS Organizers: Yaacoubi Slah, Nico Declercq
Chair: Yaacoubi Slah

11417 INVESTIGATIONS OF MECHANICAL GUIDED WAVES PROPAGATION IN PIPES REPAIRED LOCALLY BY COMPOSITE PATCHES
***Slah Yaacoubi**, Weina Ke*

7651 LAMINATE ELEMENT METHOD AND ITS APPLICATION TO THE STUDY OF GUIDED WAVE RESONANCE PHENOMENA IN LAYERED ELASTIC STRUCTURES WITH DEFECTS
*Evgeny Glushkov, Natalia Glushkova, **Artem Eremin**, Rolf Lammering*

Friday, June 10 **Leda**
11:30-13:30

MS 809: MULTISCALE STOCHASTIC FINITE ELEMENT METHODS

MS Organizers: George Stefanou, Xi Frank Xu, Yu Ching Wu
Chair: George Stefanou, Yu Ching Wu

10001 **KEYNOTE:** DETERMINATION OF MESOSCALE RANDOM FIELDS FOR THE APPARENT PROPERTIES OF SPATIALLY RANDOM COMPOSITES
*Dimitrios Savvas, **George Stefanou***

9348 THE STOCHASTIC FINITE ELEMENT METHOD FOR NUCLEAR APPLICATIONS
***José David Arregui Mena**, Lee Margetts, Llion Evans, D. V. Griffiths, Anton Shterenlikht, Luis Cebamanos, Paul M Mummery*

7467 MULTI-SCALE STOCHASTIC STUDY OF THE GRAIN ORIENTATION AND ROUGHNESS EFFECTS ON POLYCRYSTALLINE THIN STRUCTURES
*V. Lucas, L. Wu, Jean-C Golinval, S. Paquay, R. Voicu, A. Baracu, **L. Noels***

6907 MULTISCALE DATA-DRIVEN STOCHASTIC FINITE ELEMENT MODELING OF CHLORIDE DIFFUSIVITY IN RECYCLED AGGREGATE CONCRETE
Yu Ching Wu

Friday, June 10 **Athena**
11:30-13:30

MS 606 - 3: COMPUTATIONAL MODELING OF HYDRAULIC FRACTURING

MS Organizers: Gianluca Cusatis, Gilles Pijaudier-Cabot, Günther Meschke
Chair: Thomas-Peter Fries

8716 **KEYNOTE:** XFEM AND PHASEFIELD MODELING OF HYDRAULIC FRACTURING PROCESSES: INFLUENCE OF PRE-EXISTING FRACTURES
***Günther Meschke**, Dirk Leonhart, Ildar Khisamitov, Seyed Mohseni, Sven Beckhuis, Jithender J. Timothy*

8222 GEOMECHANICAL MODELING OF INDUCED MICROSEISMICITY
***Mirko van der Baan**, Drew Chorney, Vincent Roche*

9294 NUMERICAL MODELLING OF COUPLED HYDRO-THERMAL PROCESSES OF THE SOULTZ HETEROGENEOUS GEOTHERMAL SYSTEM
*Musa Dahiru Aliyu, **Hua-peng Chen***

9321 MULTISCALE DISCRETE MODELING OF THE MECHANICAL BEHAVIOR OF BLACK SHALE
***Weixin Li**, Roman Wendner, Gianluca Cusatis*

9363 HYDRAULIC FRACTURING SIMULATION WITH A PHASE FIELD APPROACH
***Yongxing Shen**, Vahid Ziaei-Rad, Cheng Cheng, Li Shen*

Friday, June 10 **Aphrodite**
11:30-13:30

MS 805 - 2: ADVANCED MULTI-PHYSICS AND MULTI-SCALE TECHNIQUES FOR MODELING INELASTIC PROCESSES IN SOLIDS: DAMAGE, FRACTURE AND CONTACT MECHANICS

MS Organizers: Mauro Corrado, Marco Paggi, José Reinoso
Chair: José Reinoso

9675 MODELING OF FRAGMENTATION IN TEMPERED GLASS WITH THE COHESIVE ELEMENT METHOD
***Mauro Corrado**, Marco Vocialta, Jean-Francois Molinari*

10150 HOMOGENIZATION OF COMPOSITES SUBJECTED TO DAMAGE, FRACTURE AND UNILATERAL CONTACT
***Sonia Marfia**, Elio Sacco*

9222 MULTISCALE SOLUTION METHODS FOR CONTACT, FRICTION, AND FRACTURE PROBLEMS
***Rolf Krause**, Roger Müller*

10239 A THREE DIMENSIONAL CONCURRENTLY COUPLED ADAPTIVE MULTISCALE METHOD FOR FRACTURE
***Pattabhi Budarapu**, José Reinoso, Marco Paggi*

7713 IDENTIFICATION OF PHASE FIELD PARAMETERS FOR A DYNAMIC CRACK PROPAGATION BENCHMARK
***Clément Roux-Langlois**, Jean-François Molinari*

Friday, June 10 **Apollo East**
11:30-13:30

MS 713 - 2: MICROSTRUCTURE-BASED MODELLING OF HETEROGENEOUS MATERIALS

MS Organizers: Jan Zeman, Jan Novak, Guillermo Díaz
Chair: Jan Zeman

6102 A COMPARATIVE STUDY OF DIFFERENT CRYSTAL PLASTICITY THEORIES: CLASSICAL VS. STRONG DISCONTINUITIES APPROACH
***Guillermo Díaz**, Volker Fohrmeister, Jörn Mosler*

11058 APPLICATION OF POLAR ELASTICITY TO THE PROBLEM OF PURE BENDING OF A THICK PLATE
***Svitlana Fedorova**, Jiří Burša*

10666 A MICRO-MACRO DESCRIPTION FOR ELASTICITY OF GRANULAR MATERIALS
Nishant Kumar, Stafan Luding, ***Vanessa Magnanimo***

11911 ARTIFICIAL MICROSTRUCTURE GENERATOR FOR DUAL-PHASE STEELS
Yuliang Hou, Alexandre Dumon, Pièrre Culière, ***Mohamed Rachik***

7768 HOMOGENIZATION TECHNIQUES FOR ACCURATE AND APPROXIMATE ESTIMATES FOR OVERALL PROPERTIES OF MICROCRACKED VISCOELASTIC MASONRIES
***Amna Rekik**, Alain Gasser*

7985 ACCOUNTING FOR TEMPERING OF MARTENSITE IN MULTISCALE MODELLING OF PHASE TRANSFORMATIONS IN DUAL PHASE STEELS BASED ON THE SOLUTION OF CARBON DIFFUSION EQUATION.
***Krzysztof Bzowski**, Monika Pernach, Maciej Pietrzyk*

Friday, June 10 **Apollo West**
11:30-13:30

MS 610: NUMERICAL METHODS TO STUDY THE CONTACT MECHANICS OF DRY, ADHESIVE AND LUBRICATED ROUGH SURFACES

MS Organizers: Carmine Putignano, Daniele Dini
Chair: Carmine Putignano

11227 A PARAMETRICALLY TIME-DEPENDENT METHODOLOGY FOR RECIPROCATING CONTACT MECHANICS BETWEEN VISCOELASTIC SOLIDS
***Carmine Putignano**, Giuseppe Carbone, Daniele Dini*

8176 PERCOLATION PROPERTIES OF THE NETWORK OF FREE CHANNELS IN SEALING APPLICATIONS
***Cinat Paolo**, Paggi Marco, Borri Claudia*

11261 STATISTICAL AND GEOMETRICAL CHARACTERISTICS OF RANDOMLY ROUGH SURFACES USED FOR CONTACT SIMULATIONS.
***Rafael Schouwenaars**, Carlos G. Figueroa, Víctor Hugo Jacobo, Armando Ortiz*

6888 NUMERICAL ANALYSIS OF FRICTIONLESS CONTACT BETWEEN 3 – D BEAMS WITH CIRCULAR CROSS-SECTION
***Olga Kawa**, Przemyslaw Litewka, Robert Studzinski*

7658 MULTISCALE FEM APPROACH FOR HYSTERESIS FRICTION AND ADHESION OF RUBBER ON ROUGH SURFACES
***Paul Wagner**, Peter Wriggers, Heiko Clasen, Corinna Prange*

Friday, June 10 **Room 1**
11:30-13:30

MS 707 - 2: MICROMECHANICAL MODELLING: COMPETITION BETWEEN ANALYTICAL AND NUMERICAL METHODS

MS Organizers: Siegfried Schmauder, Vera Petrova
Chair: Alla Balueva

7510 **KEYNOTE:** EFFECTIVE ELASTICITY COEFFICIENTS IN DRY POROUS MATERIALS. NUMERICAL AND SEMI-ANALYTICAL APPROACHES
***Vladimir Sladek**, Bruno Musil, Jan Sladek*

10814 MODELING AND ANALYSIS OF FRACTURE OF FUNCTIONALLY GRADED COATINGS SUBJECT TO THERMO-MECHANICAL LOADING
***Vera Petrova**, Siegfried Schmauder*

6124 THE INFLUENCE OF THE NONHOMOGENEOUS DISTRIBUTION OF REINFORCING PARTICLES ON THE STRENGTH OF METAL MATRIX COMPOSITES: MICROMECHANICAL MODELLING AND SIMULATION
Hai Qing

7250 ATOMISTIC AND CONTINUUM INVESTIGATION OF THE DYNAMIC TENSILE STRENGTH OF ALUMINUM AND IRON WITH FOREIGN NANOINCLUSIONS
***Viktor Pogorelko**, Alexander Mayer*

Friday, June 10 **Room 2**
11:30-13:30

MS 1303: ANALYSIS AND DESIGN OF SAFETY CRITICAL SYSTEMS UNDER UNCERTAINTY

MS Organizers: Edoardo Patelli, Michael Beer, Matteo Broggi, Francisco Alejandro Díaz De la O

Chair: Marco de Angelis

10737 POWER GRID ROBUSTENSS TO SEVERE FAILURES: TOPOLGICAL AND FLOW BASED METRICS COMPARISION
***Roberto Rocchetta**, Edoardo Patelli*

10693 EFFICIENT COMPUTATION OF FAILURE PROBABILITY BOUNDS BY MEANS OF LINE SAMPLING
***Marco de Angelis**, Edoardo Patelli*

4995 IDENTIFICATION OF INTERVAL FIELDS FOR SPATIAL UNCERTAINTY REPRESENTATION IN FINITE ELEMENT MODELS
***Matthias Faes**, Jasper Cerneels, Dirk Vandepitte, David Moens*

7012 INTRODUCTION OF BEAD INGS INTO A CRASH TUBE USING A ROBUST OPTIMISATION APPROACH
Stefan Scheiblhofer

12037 INTERVAL FINITE ELEMENT ANALYSIS OF STRUCTURES WITH UNCERTAIN-BUT-BOUNDED PARAMETERS
***Eugenia Romeo**, Alba Sofi*

7165 DYNAMICAL ANALYSIS OF PLATE MODELS WITH UNCERTAIN STRUCTURAL PROPERTIES USING THE INTERVAL FIELD METHOD
***Maurice Imholz**, Dirk Vandepitte, David Moens*

Friday, June 10 **Room 4**
11:30-13:30

CS 1202 - 2: STRUCTURAL ANALYSIS AND MULTI BODY DYNAMICS

Chair: Pavel Polach

9407 APPROACHES TO THE CREATION OF MULTIBODY MODELS OF THE VVER 1000 NUCLEAR REACTOR CONTROL ASSEMBLY
***Pavel Polach**, Michal Hajžman*

7895 ON THE NUMERICAL INFLUENCES OF INERTIA REPRESENTATION FOR RIGID BODY DYNAMICS
***Xiaoming Xu**, Wanxie Zhong*

CS 1301: MODECULAR DYNAMICS

Chair: Clara Salueña

9571 ENFORCING ENERGY CONSERVATION IN MOLECULAR DYNAMICS SIMULATIONS
*Josep Bonet, **Clara Salueña***

8655 COARSE GRAINING NON-EQUILIBRIUM SYSTEMS AND PATH SPACE INFORMATION THEORY
***Evangelia Kalligiannaki**, Vagelis Harmandaris, Markos Katsoulakis, Petr Plechac*

9122 SIMULATION OF CABIN AIR FILTERS - MOLECULAR DYNAMICS VS. CONTINUUM APPROACH
***Carolin Schober**, David Keerl, Martin J. Lehmann, Miriam Mehl*

Friday, June 10 **Room 5**
11:30-13:30

MS 1014: DESIGN OPTIMIZATION AND INVERSE PROBLEMS FOR WAVE PROPAGATION PROBLEMS

MS Organizers: Martin Berggren

Chair: Martin Berggren

10963 FULL-WAVEFORM INVERSION FOR THE RECONSTRUCTION OF ELECTROMAGNETIC PROPERTY PROFILES USING PLANE MICROWAVES
*Namho Joh, **Jun Won Kang***

5410 OPTIMIZATION OF JUNCTIONS OF OPEN WAVEGUIDES IN 2D
Julian Ott

11745 TOWARDS A DIMENSIONALLY ADAPTIVE METHOD IN MAGNETOTELLURICS
***Julen Alvarez-Aramberri**, David Pardo*

9033 TOPOLOGY OPTIMIZATION OF WIDEBAND COMPACT WAVEGUIDE TRANSITIONS WITH MINIMAL-SIZE CONTROL
***Emadeldeen Hassan**, Linus Hägg, Eddie Wadbro, Martin Berggren*

Friday, June 10 **Room 7**
11:30-13:30

MS 808 - 2: MULTISCALE AND MULTIPHYSICS MODELING OF CEMENTITIOUS MATERIALS

MS Organizers: Jörg F. Unger, Thomas Titscher

Chair: Jörg F. Unger

7008 IMPLICIT/EXPLICIT (IMPL-EX) INTEGRATION OF THE GRADIENT ENHANCED DAMAGE MODEL
***Thomas Titscher**, Jörg F. Unger, Javier Oliver*

11003 REINFORCEMENT CORROSION IN CONCRETE DUE TO CARBONATION AND CHLORIDE INGRESS UP AND BEYOND INDUCTION PERIOD
*Vit Smilauer, Libor Jendele, Jan Cervenka, **Karolina Hajkova***

9556 CHLORIDE DIFFUSION THROUGH THE INTERFACIAL TRANSITION ZONE BETWEEN AGGREGATES AND CEMENT PASTE IN CONCRETE
***Pietro Carrara**, Laura De Lorenzis*

9527 COMPUTATIONAL MODELING OF THE INTERACTION BETWEEN CRACKING, CHLORIDE DIFFUSION AND BINDING IN HARDENED CEMENT PASTE
***Tao Wu**, Pietro Carrara, Laura De Lorenzis*

Friday, June 10 **Room 8**
11:30-13:30

MS 802 - 2: ADVANCES IN THE MODELLING OF MULTI-SCALE, MULTI-PHYSICS AND MULTI-UNCERTAINTY PROBLEMS

MS Organizers: Francisco M. Andrade Pires, Chengfeng Li

Chair: Francisco M. Andrade Pires, Chengfeng Li

6335 STRUCTURAL RELIABILITY ANALYSIS – A REVIEW AND COMPARISION STUDY
***Muhannad Aldosary**, Chenfeng Li*

8777 APPLICATION OF THE MULTISCALE FEM TO THE DETERMINATION OF MACROSCOPIC DEFORMATIONS CAUSED BY DISSOLUTION-PRECIPITATION CREEP
***Sandra Klinge**, Jörm Mosler, Klaus Hackl*

6768 NUMERICAL MODELLING OF AMORPHOUS POLYMERS: FORMULATION AND IMPLEMENTATION
***Fernando Pala Beirão Macedo**, Shenghua Wu, Seyed Mohsen Mirkhalaf Valashani, Francisco Manuel Andrade Pires*

8869 MULTISCALE SIMULATION OF THREE-DIMENSIONAL UNSTEADY GAS FLOWS IN MICROCHANNELS OF TECHNICAL SYSTEMS
***Viktoriia Podryga**, Yury Karamzin, Tatiana Kudryashova, Sergey Polyakov*

12009 AUGMENTED SURROGATES FOR UNCERTAINTY QUANTIFICATION OF FUSION PLASMAS
***Varis Carey**, Robert Moser, C.S. Chang, Craig Michoski*

Friday, June 10 **Room 9**
11:30-13:30

MS 908 - 2: VERIFICATION AND VALIDATION OF STRUCTURAL MECHANICS SIMULATION MODELS

MS Organizers: George Lampeas
Chair: George Lampeas

5900 **KEYNOTE:** DEVELOPMENT AND VALIDATION OF A COMPOSITE FASTENED JOINT MODEL USING ADVANCED MEASUREMENT TECHNIQUES
*Nikolaos Perogamvros, **George Lampeas***

8600 OPTIMUM DESIGN, FINITE ELEMENT MODEL UPDATING AND DYNAMIC ANALYSIS OF A FULL LAMINATED GLASS PANORAMIC CAR ELEVATOR
***Dimitrios Giagopoulos**, Iraklis Chatziparasidis*

11192 A NEW SHELL FINITE ELEMENT WITH DRILLING DEGREES OF FREEDOM AND ITS RELATION TO EXISTING FORMULATIONS
***Robert Winkler**, Dimitrios Plakomytis*

11185 MODELING BONDED ANCHORS IN A DISCRETE ELEMENT FRAMEWORK
***Marco Marcon**, Jan Vorel, Roman Wendner*

Friday, June 10 **Room 10**
11:30-13:30

MS 107: MULTI-SCALE MODELS IN BIOMECHANICS AND MECHANOTRANSDUCTION

MS Organizers: Suvranu De, Michael Sacks, Abdul Barakat
Chair: Catherine Pagiatakis

7416 2D FINITE ELEMENT MODEL TO EXPLORE DUROTAXIS DURING SINGLE CELL MIGRATION
***Rachele Allena**, Mukund Gupta, Benoit Ladoux, Denis Aubry*

7501 A NUMERICAL GEOMETRIC MULTISCALE EVALUATION OF THE LOCALIZED HAEMODYNAMIC INTERACTIONS WITHIN CORONARY BIFURCATION LESIONS
***Catherine Pagiatakis**, Jean-Claude Tardif, Philippe L. L'Allier, Rosaire Mongrain*

9153 EFFECT OF RED BLOOD CELLS ON ENDOTHELIAL SHEAR STRESS IN MICROVESSELS
***Brenna Hogan**, Zaiyi Shen, Chaouqi Misbah, Abdul Barakat*

Friday, June 10 **Room 15**
11:30-13:30

CS 610: AERO-ACOUSTICS

Chair: Smaïne Kouidri

7932 NUMERICAL INVESTIGATION OF THERMOACOUSTIC ENGINE USING IMPLICIT LARGE EDDY SIMULATION
*Mustapha Mahdaoui, Rachid Bennacer, **Smaïne Kouidri,** N. Martaj*

8111 AN OUTFLOW BUFFER ZONE BASED ON THE JET MEAN FLOW SELF-SIMILARITY
***Carlos Moser**, Andrea Da Ronch*

11941 SEMI-DISCRETE COINCIDENCE IN THE MID-FREQUENCY SOUND TRANSMISSION THROUGH RIB-STIFFENED PANELS
***Edwin Reynders**, Cédric Van hoorickx, Arne Dijckmans*

7916 USING SPECTRAL-RESOLUTION SCHEMES FOR THE SIMULATION OF RANKINE VORTEX INSTABILITY
*Anatol V. Alexandrov, **Ludwig W. Dorodnicyn***

4445 FLUID ANALYSIS USING FICTITIOUS DOMAIN FINITE ELEMENT METHOD
***Yukihiro Terakado**, Tahahiko Kurahashi*

7445 ON THE SIMULATION OF AERODYNAMIC NOISE WITH DIFFERENT TURBULENCE MODELS
***Xin Huang**, Michael Schäfer*

Friday, June 10 **Room 18**
11:30-13:30

MS 804 - 3: MULTISCALE AND COMPUTATIONAL APPROACHES TO FRACTURE AND FAILURE

MS Organizers: Haim Waisman, Caglar Oskay
Chair: Haim Waisman

9300 **KEYNOTE:** STABILITY ANALYSIS OF THE PHASE FIELD METHOD FOR FRACTURE MECHANICS
*Miguel Arriaga, **Haim Waisman***

12093 **KEYNOTE**: DISCONTINUOUS GALERKIN FORMULATION WITH NITSCHE FLUX FOR COHESIVE FRACTURE SIMULATIONS
*M. Reza Hirmand, **Katerina D. Papoulia***

9284 DYNAMIC HYDRAULICALLY DRIVEN FRACTURE WITH XFEM
***Robert Gracie**, Matin Esfahani, Mohammad Komijani*

11443 TEN YEARS OF INDUSTRIAL APPLICATIONS WITH THE EXTENDED FINITE ELEMENT METHOD
***Eric Wyart**, Benoït Dompierre, Olivier Pierard, Loïc Debeugny, Didier Soria*

Friday, June 10 **Room 21**
11:30-13:30

MS 910 - 3: HIGH ORDER CFD METHODS: CONCLUSIONS AND OUTLOOK

MS Organizers: Koen Hillewaert, John Ekaterinaris, Peter Vincent, Norbert Kroll, Norbert Huynh, Z.J. Wang
Chair: Z.J. Wang

11177 **KEYNOTE:** SUMMARY AND CONCLUSIONS OF THE COMPUTATIONAL CHALLENGE TEST CASES
***Koen Hillewaert**, Tobias Leicht*

8584 THE STUDY OF QUASI-ANALYSIS NEWTON/KRYLOV IMPLICIT DISCONTINOUS GALERKIN METHOD FOR VISCOUS FLOW
***Wei Liu**, Laiping Zhang, Ming Li*

8858 PERSPECTIVES AND NEEDS OF HIGH-ORDER METHODS FOR CFD INDUSTRIAL APPLICATIONS
***Vincent Brunet**, Xavier Garnaud, Michel Dumas, Thomas Fédérici, Gilles Leroy, Lorenzo Pons*

9490 STABILITY AND ALGORITHMIC EFFICIENCY OF A HIGH ORDER FINITE VOLUME METHOD
Jean-Marie Le Gouez

12052 THE WING-TIP VORTEX TEST CASE.
***Jean-Eloi Lombard,** David Moxey, Spencer Sherwin*

Friday, June 10 **Room 23**
11:30-13:30

MS 1011 - 2: SURROGATE-ASSISTED EVOLUTIONARY ALGORITHMS IN AERODYNAMIC DESIGN/OPTIMIZATION

MS Organizers: Varvara Asouti, Esther Andrés, Emiliano Iuliano
Chair: Varvara Asouti

10088 EVOLUTIONARY AERODYNAMIC SHAPE OPTIMIZATION THROUGH THE RBF4AERO PLATFORM
*Dimitrios Kapsoulis, **Varvara Asouti**, Kyriakos Giannakoglou, Stefano Porziani, Emiliano Costa, Corrado Groth, Ubaldo Cella, Marco Evangelos Biancolini*

5627 PERFORMANCE COMPARISON OF KRIGING AND SVR SURROGATE MODELS APPLIED TO THE OBJECTIVE FUNCTION PREDICTION WITHIN AERODYNAMIC SHAPE OPTIMIZATION
*Daniel Viúdez-Moreiras, **Esther Andrés-Pérez**, Daniel González-Juárez, Mario J. Martin Burgos*

5102 SURROGATE-BASED GLOBAL OPTIMIZATION OF A CYLINDER BY THE USE OF EVOLUTIONARY ALGORITHMS, SUPPORT VECTOR MACHINES AND NON UNIFORM B-SPLINES
***Esther Andrés-Pérez**, Daniel González-Juárez, Mario J. Martin-Burgos, Leopoldo Carro-Calvo,Sancho Salcedo-Sanz*

8308 HEAT TRANSFER OPTIMIZATION OF A RIBBED SURFACE USING SURROGATE-ASSISTED GENETIC ALGORITHMS
***Panagiotis Tsirikoglou**, Ghader Ghorbaniasl, Simon Abraham, Chris Lacor*

5101 CONSTRAINED MULTI-POINT AERODYNAMIC SHAPE OPTIMIZATION OF THE VISCOUS DPW WING THROUGH EVOLUTIONARY PROGRAMMING AND SUPPORT VECTOR MACHINES
***Daniel González Juárez**, Esther Andrés Pérez, Mario Jaime Martin Burgos*

13:30-14:30
Lunch Break

PLENARY LECTURES

Friday, June 10 **14:30-16:00**		**Zeus**
Chair:	Thomas J.R. Hughes	
12630	RECENT ADVANCES IN TOPOLOGY OPTIMIZATION ***Ole Sigmund***	
10414	RECENT ADVANCES IN PARAMETRIC NONLINEAR MODEL ORDER REDUCTION: TREATMENT OF SHOCKS, CONTACT AND INTERFACES, STRUCTURE-PRESERVING HYPER REDUCTION, ACCELERATION OF MULTISCALE FORMULATIONS, AND APPLICATION TO DESIGN OPTIMIZATION ***Charbel Farhat****, P. Avery, T. Chapman, P. Collins, K. Washabaugh, M. Zahr*	

16:00-16:30

Closing Ceremony