COUPLED 2021
Technical Programme

Monday, 14-06-2021

11:00 - 11:30 (Europe/Madrid), Room 1
SOC - Welcome

11:30 - 12:15 (Europe/Madrid), Room 1
PL1 - Plenary Lecture I - S. Sherwin

The thick strip method for slender body fluid structure interaction
S. Sherwin*

12:15 - 13:00 (Europe/Madrid), Room 1
PL2 - Plenary Lecture II - A. Pandolfi

Microstructured porous material models for damage induced by fluids in compressed rocks
A. Pandolfi*

13:00 - 14:00 (Europe/Madrid),
BRK - Lunch Break

14:00 - 16:00 (Europe/Madrid), Room 1
IS24A - Optimal Design of Structures and Metamaterials: Innovative Techniques for Engineering Applications
Organized by: S. Perotto, N.Ferro and R. Ferrante

Topology optimization of lattice materials with geometric defects induced by power bed fusion
D. Pasini*

A Computational Framework for the Development of Programmable Materials based on Unit Cells and Multiscale Optimization
A. Leichner*, T. Lichti, H. Andrä, F. Wenz, C. Eberl, A. Schwarz, C. Hübner

Electro-thermo-mechanical analysis of actuator structure made of functionally graded material.
J. Paulech*, V. Kutiš, J. Murín, G. Gálik, V. Goga

Adaptive topology optimization of cellular materials for elastic and thermal applications
M. Gavazzoni*, . Ferro, S. Foletti, S. Perotto

Topology Optimization for Thermoelastic Metamaterials
M. van den Ouden*, S. Koppen, M. Langelaar

Periodic Open Cellular Structures for intensification of catalytic reactors
C. Ferroni*, M. Bracconi, M. Ambrosetti, M. Maestri, G. Groppi, E. Tronconi

14:00 - 16:00 (Europe/Madrid), Room 2
IS05A - Advances in Particle-Based Methods for the Simulation of Coupled Problems
Organized by: A. Larese, M. Cremonesi and R. Wüchner

KEYNOTE - Modeling cascading gravitational mass movements with the Material Point Method
J. Gaume*, A. Cicoira, X. Li, L. Blatny, C. Jiang, B. Sovilla

Overview of MPM formulations for unsaturated soils
F. Ceccato, A. Yerro, **V. Girardi***

A Staggered Coupling Scheme of the Material Point Method and the Finite Element Method using Gauss Seidel Communication Pattern
V. Singer*, B. Chandra, R. Wüchner, A. Larese

MPM modelling of earthquake-induced rapid landslide using by thermo-hydro-mechanical coupled formulation
L. Lemus*, N. Pinyol, E. Alonso

14:00 - 16:00 (Europe/Madrid), Room 3
IS12A - Coupled and Multi-Scale Bioengineering Problems
Organized by: E. Divo and A. Kassab

Multi-scale Investigation of Magneto-Hydrodynamic Assist Device for Actively Powered Fontan Circulation
A. Das*, R. Prather, E. Divo, A. Kassab, A. Nunez, W. DeCampli

Tailoring Left Ventricular Assist Device Cannula Implantation Using Coupled Multi-Scale Multi-Objective Patient-Specific Optimization
A. Dankano*, R. Prather, B. Lozinski, E. Divo, W. DeCampli, A. Kassab

An Isogeometric method for modeling the excitation-contraction of a thin cardiac tissue
A. Nitti*, M. de Tullio, J. Kiendl, A. Gizzi

In-silico analysis of materials for aortic valve replacements
D. Oks*, C. Samaniego, M. Vázquez, G. Houzeaux, C. Butakoff

A coupled ODE-PDE model for chemotaxis on microfluidic chips

G. Bretti*, R. Natalini, N. Roselli

14:00 - 16:00 (Europe/Madrid), Room 4
IS25A - Physics Informed Machine Learning For Scientific Computing
Organized by: M. Lupo Pasini

Deep learning the solution operator of parametric partial differential equations
S. Wang*, H. Wang, P. Perdikaris

Self-supervised Learning for Astronomical Sky Surveys
P. Harrington*, M. Hayat, G. Stein, Z. Lukic, M. Mustafa

A Deep Learning Approach for Curvature Prediction in Algebraic Volume of Fluid Methods
Z. Kraus, J. Friedrich, **F. Köhler***, M. Schäfer

Deep learning-based reduced order models for real-time approximation of parametrized coupled PDE problems
S. Fresca*, A. Manzoni

Artificial neural network for bifurcating phenomena modelled by nonlinear parametrized PDEs
F. Pichi*, F. Ballarin, G. Rozza, J. Hesthaven

Reduced models for chemical kinetics using autoencoder neural networks
P. Zhang*, R. Sankaran

14:00 - 16:00 (Europe/Madrid), Room 5
IS30 - Virtual, Digital and Hybrid Twins in The Third Millennium Engineering, Industry and Society
Organized by: F. Chinesta, E.Cueto, J-L. Duval and C. Farhat

KEYNOTE - Learning digital twins for dynamical systems
P. Berri*, L. Mainini

Discovering the physical structure of dynamical systems with deep learning
Q. Hernández*, A. Badías, D. González, F. Chinesta, E. Cueto

Physically sound deep learning development of digital twins from partial measurements of real world data
B. Moya*, A. Badías, D. González, F. Chinesta, E. Cueto

On the development of digital twins that learn and correct themselves
B. Moya, A. Badías, I. Alfaro, F. Chinesta, **E. Cueto***

Fast Computation in Electric Motors for Design, Optimization and Prediction of Noise, Vibration and Harshness
A. Sancarlos*, K. Bouayed, N. Zerbib, E. Cueto, F. Chinesta, J. Duval

14:00 - 16:00 (Europe/Madrid), Room 6
IS13A - Coupled Partial Differential Equations Across Dimensions - Discretization Approaches and Applications
Organized by: K.-A. Mardal and P. Zunino

Multiscale coupling of one-dimensional vascular models and elastic tissues
L. Heltai*, A. Caiazzo, L. Müller

A mixed framework for topological model reduction of coupled PDEs
I. Gjerde*, M. Rognes

1D-3D methods for tubular network systems embedded in porous media beyond isotropic linear diffusion
T. Koch*, H. Wu, R. Helmig, M. Schneider

Modeling and simulation of vascular tumors embedded in evolving capillary networks
T. Köppl*, P. Jha, M. Fritz, T. Oden, W. Andreas, B. Wohlmuth

Finite Element Methods for the simulation of thixotropic flow problems
N. Begum*, A. Ouazzi, S. Turek

14:00 - 16:00 (Europe/Madrid), Room 7
IS11 - Control, Optimisation, Uncertainty Quantification, and Reduced Order Models for Coupled Problems
Organized by: H. Matties, R. Ohayon and K.C. Park

Reduced Order Methods for Uncertainty Quantification Problems applied to Optimal Control in Environmental Sciences
M. Strazzullo*, G. Carere, F. Ballarin, G. Rozza, R. Stevenson

Feedback control for coupled systems by kernel surrogates.
T. Ehring*, . Haasdonk

RELIABILITY-BASED DESIGN OPTIMISATION OF THE AEROELASTIC BEHAVIOUR OF COMPOSITE LAMINATE PLATES
M. SHARIFI*, A. Vincenti, J. Chassaing

Projection-based reduced order model for prestressed hydroelastic vibrations
C. HOAREAU*, J. DEÜ, R. OHAYON

Biomechanical tongue model prediction of fossil hominins: evaluation and uncertainties propagation
M. EL MOUSS*, A. Belme, Y. Payan, P. Perrier, A. VIALET

16:00 - 16:30 (Europe/Madrid),
BRK - Coffee Break

16:30 - 17:15 (Europe/Madrid), Room 1
PL3 - Plenary Lecture III - D. Calvetti

Multiscale multiphysiology predictive models of brain

D. Calvetti*

17:30 - 19:30 (Europe/Madrid), Room 1

IS24B - Optimal Design of Structures and Metamaterials: Innovative Techniques for Engineering Applications

Organized by: S. Perotto, N.Ferro and R. Ferrante

Topology optimization for additive manufacturing: numerical strategies for the overhang problem
F. Mezzadri*

Parametric Shape Optimization for combined Additive–Subtractive manufacturing
L. Tamellini*, M. Chiumenti, C. Altenhofen, M. Attene, O. Barrowclough, M. Livesu, F. Marini, M. Martinelli, V. Skytt

Modeling, Topology Optimization and Experimental Validation of Glass-Transition-based 4D-printed Polymeric Structures
S. Pakvis*, G. Scalet, S. Marconi, F. Auricchio, M. Langelaar

Automate shape optimization with Fireshape
A. Paganini*, F. Wechsung

Modelling and Control of Complex Shapes via Functional Data Analysis
R. Scimone*, T. Taormina, B. Colosimo, M. Grasso, A. Menafoglio, P. Secchi

A deterministic approach for shape and topology optimisation under material uncertainty in additive manufacturing
C. Mang*, L. Zoghaib, J. Cortial, C. Nardoni, D. Danan, F. Bordeu

17:30 - 19:30 (Europe/Madrid), Room 3

IS12B - Coupled and Multi-Scale Bioengineering Problems

Organized by: E. Divo and A. Kassab

Preliminary Investigation of an Injection-Jet Self-Powered Fontan Circulation
R. Prather*, A. Das, M. Farias, E. Divo, A. Kassab, W. Decampli

Multiscale Investigations of Hybrid Comprehensive Stage II Procedure for Treatment of Congenital Heart Disease
A. Das, R. Prather, M. Hameed, M. Farias, **E. Divo***, A. Kassab, W. Decampli

Nonlocal Multiscale Interactions in Brain Neurodegenerative Protein Dynamics and Coupled Proteopathic Processes
S. Pal, **R. Melnik***

Joint Contact Pressure on Healthy and Dysplastic Infant Hips during the Barlow Maneuver
C. Zlock, L. Donohue, A. Fleming, **V. Huayamave***

17:30 - 19:30 (Europe/Madrid), Room 4

IS25B - Physics Informed Machine Learning For Scientific Computing

Organized by: M. Lupo Pasini

Data-driven reduced order modeling of environmental hydrodynamics using deep autoencoders and neural ODEs
S. Dutta*, P. Rivera-Casillas, O. Cecil, M. Farthing, E. Perracchione, M. Putti

Machine Learning Assisted Simulations of Materials Properties
Y. Li*, M. Lupo Pasini, M. Lupo Pasini, M. Eisenbach

Studies of Shape Memory Graphene Nanostructures via Integration of Physics-based Modelling and Machine Learning
C. Leon*, R. Melnik

Finite element model and machine learning for the structural health monitoring of continuous welded rails
A. Enshaeian, M. Belding, **P. Rizzo***

Designing molecular models by machine learning and experimental data
C. Clementi*

17:30 - 19:30 (Europe/Madrid), Room 6

IS13B - Coupled Partial Differential Equations Across Dimensions - Discretization Approaches and Applications

Organized by: K.-A. Mardal and P. Zunino

Robust Preconditioners for Mixed-dimemsional Models of Flow in Fractured Porous Media
A. Budisa, W. Boon, **X. Hu***

Interface Preconditioners for Multiphysics Problems
A. Budisa*, X. Hu, M. Kuchta, K. Mardal, L. Zikatanov

3D-1D coupling on non conforming meshes via a three-field optimization based domain decomposition
S. Berrone*, D. Grappeine, S. Scialò

A Mortar-type Finite Element Approach for Beam-like Structures Submerged in Incompressible Fluid Flow
N. Hagmeyer*, M. Mayr, A. Popp

A mortar-type finite element approach for full coupling of 1D Cosserat structures embedded inside 3D volumes
I. Steinbrechere*, A. Popp, C. Meier

17:30 - 19:30 (Europe/Madrid), Room 2

IS05B - Advances in Particle-Based Methods for the Simulation of Coupled Problems

Organized by: A. Larese, M. Cremonesi and R. Wüchner

Numerical simulation of water waves generated by landslides impact. Application to Vajont disaster
M. Cremonesi*, A. Franci, U. Perego, G. Crosta, E. Oñate

Two-Fluid solution of hydraulic flows in realistic mountain scenarios
R. Rossi*, U. Chasco, R. Zorrilla

Coupling the Discrete Element Method with the Finite Element Method to Simulate Rockfall Impact Experiments
K. Sautter*, H. Hofmann, C. Wendeler, M. Celigueta, P. Bucher, K. Bletzinger, R. Wüchner

Particle Finite Element simulation of cutting tool-soil interaction in partially saturated soft soils
A. Leon Bal*, G. Meschke

A coupled two-phase model for numerical simulation of a real debris avalanche
S. Moussavi Tayyebi*, M. Pastor, M. Martin Stickle, A. Yague, D. Manzanal, M. Molinos, P. Navas

17:30 - 19:30 (Europe/Madrid), Room 5
IS33 - Numerical solutions of Coupled Problems Arising from Concerns about the Environmental Climate Impact, Safety, Impact on Global Health Related to International Air Transport
Organized by: J. Periaux

Numerical Simulations of Radiative Transfer equations for Greenhouse Gas Effects
O. Pironneau*

Models for the Geographic Spread of Infectious Disease Among Humans
W. Fitzgibbon*, J. Morgan

Unsteady Interaction of Aerodynamics with Wing Structure in Gust Load Control
N. Quin*

Multi-objective Natural Laminar Flow Optimization using Variable Fidelity and Evolutionary Algorithms for Drag reduction. Applications to Aircraft Wing Shape Design.
J. Periaux*, C. Yongbin, T. Zhili

17:30 - 19:30 (Europe/Madrid), Room 7
IS17A - Full and Reduced Order Methodologies for Flow, Coupled Flows and Fluid-Structure Interaction Problems
Organized by: M. Giacomini and M. Discacciati

KEYNOTE -A computational study of two-phase flows on surfaces
M. Olshanskii, Y. Palzhanov, **A. Quaini***, A. Zhiliakov

Linearized Boundary Element Method with Arbitrary Lagrangian Eulerian formulation for deformable structures coupled with potential flows
R. Le Mestre*, J. Schotté, O. Doaré

Interface conditions for arbitrary flows to the fluid-porous interface in Stokes-Darcy systems
E. Eggenweiler*, I. Rybak, M. Discacciati

Regularization-robust preconditioners for optimal control problems under uncertainty
F. Nobile, **T. Vanzan***

Driving bifurcating parametrized nonlinear PDEs by optimal control strategies: application to Navier-Stokes equations
F. Pichi, M. Strazullo, **F. Ballarin***, G. Rozza

Tuesday, 15-06-2021

09:00 - 11:00 (Europe/Madrid), Room 1
IS24C - Optimal Design of Structures and Metamaterials: Innovative Techniques for Engineering Applications
Organized by: S. Perotto, N.Ferro and R. Ferrante

Topological derivative-based topology optimization of incompressible structures using mixed formulations
I. Castañar*, J. Baiges, R. Codina

Stiffness and strength-based lightweight design of structures and materials using topology optimization
C. Almeida*, F. Conde, P. Coelho

Multiscale modelling of flow due to the peristaltic wave in deforming poro-piezoelectric medium
E. Rohan*, V. Lukeš, J. Camprová-Turjanicová

Morphological Instability of a Nanovoid in a Solid during Surface Diffusion
A. Vakaeva, **G. Shuvalov***, S. Kostyrko

Energy-momentum time integration of gradient-based models for fiber-bending stiffness in anisotropic thermo-mechanical continua
J. Dietzsch*, M. Groß, I. Kalaimani

Variational computational modelling of dynamical behaviour of fiber roving composites with inelastic anisotropic continua and thermomechanical coupling
M. GROSS*, J. DIETZSCH, I. KALAIMANI, T. SALEH

09:00 - 11:00 (Europe/Madrid), Room 2
IS05C - Advances in Particle-Based Methods for the Simulation of Coupled Problems
Organized by: A. Larese, M. Cremonesi and R. Wüchner

A coupled seepage-deformation SPH framework for unsaturated porous medium
Y. Lian*, H. Bui, G. Nguyen, A. Haque

Simulation of Breakwater Failure induced by Tsunami Using an ISPH-DEM Coupled Method
K. Tsuji*, M. Asai, K. Kasama

Smoothed particle hydrodynamics method for landslide problems based on Biot's formulation and elastoplastic constitutive models
D. Morikawa*, M. Asai

Modelling concrete flow with a resolved SPH-DEM coupled method
C. Peng*, L. Zhan, W. Wu

Discrete numerical modelling of single-particle crushing and oedometric tests, for different values of suction

J. Manso*, J. Marcelino, L. Caldeira

09:00 - 11:00 (Europe/Madrid), Room 3

IS28 - Solution of Coupled Problems With Embedded Discretization Techniques

Organized by: S. Badia, A. Massing and F. Verdugo

Embedded Mesh Methods for CFD and FSI problems. Application to exact representation of thin-walled bodies.
R. Zorrilla*, R. Rossi

High-order unfitted finite elements with aggregation by interpolation
E. Neiva*, S. Badia, F. Verdugo

From STLs to embedded integration meshes via robust polyhedra clipping
P. Martorell*, S. Badia, F. Verdugo

High-order time-stepping methods for cut finite element discretizations of evolving domain problems
A. Massing*, S. Sticko, B. Kovács

09:00 - 11:00 (Europe/Madrid), Room 4

IS23A - Numerical Methods in Geomechanics

Organized by: R. Uzuoka, K. Fujisawa, A. Murakami and M. B. Can Ulker

Elastoplastic indentation of unsaturated soils using a rigid cylinder
J. Ghorbani*, J. Kodikara

Evaluation of the performance of u–p formulation-based analysis by the u–w–p formulation-based analysis in oscillation problem
T. Toyoda*, T. Noda

Effect of relative acceleration of pore fluid on seismic behaviour of unsaturated embankment
R. Uzuoka*, M. Yaku, K. Ueda

Clarification of water absorption failure mechanisms of unsaturated silt triaxial specimen through three-phase elastoplastic finite deformation analysis considering inertia force
T. YOSHIKAWA*, T. NODA

A Fully Coupled Theoretical and Computational Model for Unsaturated Soils: Numerical Formulation and Experimental Verification
M. Eyupgiller, **M. Ulker***

09:00 - 11:00 (Europe/Madrid), Room 5

IS14A - Coupled Simulations for Additive Manufacturing

Organized by: F.Auricchio, S.Morganti and A. Reali

Immersed thermo-mechanical analysis of selective laser melting processes
M. Carraturo*, J. Jomo, S. Kollmannsberger, E. Rank, A. Reali, F. Auricchio

Handling heterogeneous structures and materials using blending schemes in heterogeneous V-reps and trivariate fillets
E. Cirillo*, R. Massalha, G. Elber

Numerical analysis of laser redefining bead geometry in wire-based plasma arc-laser hybrid additive manufacturing of titanium alloys
X. Chen*, C. Wang, J. Ding, S. Williams

Detailed numerical analysis of thermomechanical simulations of the SLS process.
C. Burkhardt*, J. Mergheim

A multiscale topology optimization method for customized orthopedic insoles
N. Ferro*, S. Perotto, D. Bianchi, R. Ferrante, M. Mannisi

A numerical framework for the electro-mechanical analysis of conductive tracks in Lightweight Embedded Electronics.
B. Cordewener*, J. Knippenberg, M. Geers, J. Remmers

Optimization of additively manufactured scaffolds for bone tissue engineering
P. Dondl*, P. Poh, M. Zeinhofer

09:00 - 11:00 (Europe/Madrid), Room 6

IS10A - Computational Models and Methods for Multiphysics Processes in Multiphase Porous Media

Organized by: L. Sanavia and C. Tamagnini

An elasto-plastic constitutive model for the chemo-mechanical behaviour of non-active clays
G. Della Vecchia*

A coupled hydro-chemo-mechanical model for rock expansions induced by crystal growth
A. Ramon*, E. Alonso

Numerical simulation of a multiphase model for the cross-linking of ultra-high viscous alginate
M. Roland*, M. Gepp, I. Meiser, F. Stracke, H. Zimmermann, S. Diebels

Finite deformation modeling of strain localization in saturated soils under non-isothermal conditions
K. Oliynyk, J. Carbonell, M. Ciantia, **C. Tamagnini***

09:00 - 11:00 (Europe/Madrid), Room 7

IS17B - Full and Reduced Order Methodologies for Flow, Coupled Flows and Fluid-Structure Interaction Problems

Organized by: M. Giacomini and M. Discacciati

High and low order hybridisable discontinuous Galerkin methods for flow problems
A. Huerta*, M. Giacomini, R. Sevilla

A Non-Intrusive Reduced Order Modelling Approach Applied to the Calibration Process in Plastics Profile Extrusion
D. Hilger*, S. Elgeti

Model order reduction approach for problems with moving discontinuous features

H. Bansal*, L. Iapichino, S. Rave, W. Schilders, N. van de Wouw

Reduced basis methods for initial condition estimation: Application to transport of contaminants
F. Silva*, N. Aretz, M. Grepl, K. Veroy

A hybrid POD approach for transient flow problems.
V. Tsiolakis*, T. Kvamsdal, A. Rasheed, E. Fonn, H. van Brummelen

A priori and a posteriori PGD separated solutions of parametrised incompressible flow problems
M. Giacomini*, R. Sevilla, A. Huerta

11:00 - 11:30 (Europe/Madrid),
BRK - Coffee Break

11:30 - 12:15 (Europe/Madrid), Room 1
PL4 - Plenary Lecture IV - M. Behr

Model Selection and Coupling in the Context of Biomedical Device Design
M. Behr*

12:15 - 13:00 (Europe/Madrid), Room 1
PL5 - Plenary Lectures V - M. Chiumenti

Developments in additive manufacturing processes: industrial technologies and numerical analyses
M. Chiumenti*

13:00 - 14:00 (Europe/Madrid),
BRK - Lunch Break

14:00 - 16:00 (Europe/Madrid), Room 2
IS09A - Block Preconditioning for Challenging Multiphysics Systems
Organized by: M. Mayr, J. Shadid, H. Waismann and S. De

Parallel FSI simulations with elastic contact on non-conforming overlapping meshes
R. Krause*, M. Nestola, C. von Planta, A. Kopanicakova, P. Zulian

A Hybrid Interface Preconditioner based on Overlapping Domain Decomposition for Monolithic Fluid-Solid Interaction Problems
M. Gee*, M. Mayr

FROSch Preconditioners for Land Ice Simulations of Greenland and Antarctica
A. Heinlein*, M. Perego, S. Rajamanickam

Partitioned Coupling vs. Monolithic Block-Preconditioning Approaches for Solving Stokes-Darcy Systems
J. Schmalfuß*, C. Riethmüller, M. Altenbernd, K. Weishaupt, D. Göddeke

Adaptive Field-split Nonlinear Preconditioning for PDEs with Error Bounds on Output Functionals
L. Liu, **D. Keyes***

14:00 - 16:00 (Europe/Madrid), Room 3
IS02A - Advances in Coupled Model Reduction in Heat Transfer, CFD and FSI
Organized by: A.Quaini, G. Rozza and G. Stabile

A structural optimization pipeline with multiple data-driven reduced order methods
M. Tezzele*, G. Rozza

Efficient solution of coupled problems through DEIM-based data projection across non-conforming interfaces
E. Zappon*, A. Manzoni, A. Quarteroni

A reduced-basis approach for coupled flow in free-fluid and porous media
R. Kandinskii*, W. Desmet, F. Naets, Y. Swolfs, S. Lomov

Registration-based model reduction with application to parameterized time-dependent shallow water equations
L. Zhang*, T. Taddei

A Reduced Order Model for incompressible flows at intermediate Reynolds numbers
M. Girfoglio*, A. Quaini, G. Rozza

A Non-Intrusive Reduced Basis Method for Accelerating Two-Scale Simulations
T. Guo*, K. Veroy

14:00 - 16:00 (Europe/Madrid), Room 4
IS29A - Uncertainty Quantification for Coupled Multi-Physics, Multi-Scale and Multi-Fidelity Modeling
Organized by: D. Allaire, A. Doostan, J. D. Jakeman and L. Tamellini

KEYNOTE - Parallelized Multilevel and Multiindex Markov Chain Monte Carlo for Large-Scale Uncertainty Quantification
L. Seelinger*, A. Reinarz, R. Scheichl

Neural network based one-shot inversion and optimization
C. Schillings*, P. Guth, S. Weissmann

Multilevel best linear unbiased estimators for Uncertainty Quantification
D. Schaden, **E. Ullmann***

Data assimilation and active learning for multi-physics problems affected by uncertainty
L. Mainini*

Uncertainty Quantification of an Autonomous Surface Vehicle by Multi-fidelity Surrogate Models

S. Ficini*, U. Iemma, R. Pellegrini, A. Serani, A. Odetti, M. Caccia, M. Diez

14:00 - 16:00 (Europe/Madrid), Room 5
IS14B - Coupled Simulations for Additive Manufacturing
Organized by: F.Auricchio, S.Morganti and A. Reali

Infrared thermography of the DED-LB/M and PBF-LB/M processes
N. Scheuschner*, S. Altenburg, G. Mohr, A. Straße, A. Gumenyuk, K. Hilgenberg, C. Maierhofer

A thermo-mechanically coupled Discrete Element Method for the simulation of bed-based Additive Manufacturing processes
B. Dorusen*, M. Geers, J. Remmers

14:00 - 16:00 (Europe/Madrid), Room 6
IS10B - Computational Models and Methods for Multiphysics Processes in Multiphase Porous Media
Organized by: L. Sanavia and C. Tamagnini

Thermo-Hydro-Mechanical Isogeometric Finite Element Analysis of Artificial Ground Freezing
R. WILLIAMS M.*, H. Bui, G. Meschke

Multiphysics modelling of tracer transport in surface-subsurface water systems
K. Živkovic*, H. Gotovac, M. Zelenika

Fluid flow and strain localisation in partially saturated porous media
M. Zaim*, G. SCIARRA, P. Kotronis, F. Collin

Numerical results and theoretical discussion of suspension mechanical behaviour under simple shear conditions
K. Boschi*, P. Marveggio, I. Redaelli, C. di Prisco

14:00 - 16:00 (Europe/Madrid), Room 7
IS31A - Algorithmic and software advances in coupling methods for climate models
Organized by: P. Bochev and R. Jacob

Improved coupling formulations and time integration strategies for ocean-atmosphere interactions
E. Blayo*, F. Lemarié, C. Pelletier, S. Thery, S. Clément

A Schwarz iterative method to evaluate ocean-atmosphere coupling schemes
O. Marti*, F. Lemarié, E. Blayo, S. Valcke

Iteratively partitioned, second-order, multirate time stepping for fluid-fluid interaction with flux conservation
J. Connors*, R. Dolan

Coupling of Naveri-Stokes equations and their hydrostatic versions
H. Tang, **W. Dong***

Mass-Conserving Implicit-Explicit Methods for Coupled Compressible Navier-Stokes Equations
S. Kang*, E. Constantinescu, H. Zhang, R. Jacob

16:00 - 16:30 (Europe/Madrid),
BRK - Coffee Break

16:30 - 17:15 (Europe/Madrid), Room 1
PL6 - Plenary Lecture VI - K. Park

Partitioned Analysis: Advances during 2001-Present and Future Challenges
K. Park*

17:30 - 19:30 (Europe/Madrid), Room 1
IS32 - Mathematical Models and Investigation Methods of Coupled Nonlinear Mechanical Systems
Organized by: Alexey A. Kireenkov

Quadcopter with thrust vector control based on Scotch yoke
S. Semendyaev*

Mechanical Constraint Arrangement and Its Multibond Graph Representation
I. Kosenko*

KEYNOTE - Influence of the Combined Dry Friction on the Dynamics of the Rigid Ball Moving Along Two parallel Rails
A. A. Kireenkov*

Modeling an unsteady elastic diffusion processes in a Timoshenko plate.
A. Zemskov*, D. Tarlakovskii

The inverse transient problem of identifying the law of change in the cross-sectional area of an elastic bar
G. Fedotenkov *, Y. Vahterova

Determination of the optimal positions of the supports of a homogeneous plate under non-stationary action
N. Lokteva*, S. Borshevetskiy

17:30 - 19:30 (Europe/Madrid), Room 2
IS09B - Block Preconditioning for Challenging Multiphysics Systems
Organized by: M. Mayr, J. Shadid, H. Waismann and S. De

A conservative implicit-PIC scheme for the hybrid kinetic-ion fluid-electron plasma model on curvilinear meshes
A. Stanier*, L. Chacon, G. Chen

An adaptive scalable fully implicit algorithm based on stabilized finite element for reduced visco-resistive MHD

Q. Tang*, L. Chacon, T. Kolev, J. Shadid, X. Tang

Block Preconditioning of a Semi-Implicit Gyrokinetic Model of Fusion Plasmas
L. Ricketson, **D. Ghosh***, M. Dorr, M. Dorf

An Algebraic Monolithic Method for Volume-coupled Multiphysics Problems.
P. Ohm*, E. Cyr, J. J. Hu, J. N. Shadid, R. S. Tuminaro, T. Wiesner

Multilevel block preconditioning for mortar contact formulations
M. Mayr*, A. Popp

17:30 - 19:30 (Europe/Madrid), Room 3
IS02B - Advances in Coupled Model Reduction in Heat Transfer, CFD and FSI
Organized by: A.Quaini, G. Rozza and G. Stabile

KEYNOTE - Hybrid reduced order models for coupled heat transfer problems
G. Stabile*, G. Rozza

Thermal coupling simulations with a viscoelastic fluid flow
L. Moreno*, R. Codina, J. Baiges

On Modeling Interfaces in Coupled Thermoelasticity: Asymptotic Approach and Numerical Validation
M. Serpilli*, S. Dumont, R. Rizzoni, F. Lebon

A Local POD - HROM framework for fast and accurate numerical simulations
J. BRAVO*, R. ROSSI, J. HERNANDEZ HORTEGA

Distributed model order reduction of a nonlinear cell model using HAPOD
T. Leibner*, M. Matis, M. Ohlberger, S. Rave

17:30 - 19:30 (Europe/Madrid), Room 4
IS29B - Uncertainty Quantification for Coupled Multi-Physics, Multi-Scale and Multi-Fidelity Modeling
Organized by: D. Allaire, A. Doostan, J. D. Jakeman and L. Tamellini

KEYNOTE - Combining Coupled Skorokhod SDE and Lattice Gas Frameworks for Multi-fidelity Modelling of Complex Behavioral Systems
T. Thieu*, R. Melnik

Utilizing multi-fidelity UQ methods to enable the efficient solution of stochastic multi-scale hybridized differential equations
T. Wildey*

Greedy resource allocation for analysis of integrated system models
S. Friedman, **J. Jakeman***, M. Eldred, L. Tamellini, A. Gorodetsky, D. Allaire

Computational Budget Allocation in Multi-fidelity Problems with Bandit Learning
A. Narayan*, Y. Xu, V. Keshavarzzadeh

Uncertainty Quantification via Multi-Fidelity Model Reduction
A. Doostan*

17:30 - 19:30 (Europe/Madrid), Room 5
IS34A - Multiphysics Problems
Organized by: G. Rozza, A. Larese and S. Perotto

Hierarchically decomposed finite element method for the coupled four fields of the fluid-structure–piezoelectric–circuit interaction
P. RAMEGOWDA*, D. ISHIHARA

Forced vibration of the aluminum beam using a piezoelectric actuator - experiment and finite element analysis.
V. Goga*, V. Kutiš, Š. Berta, G. Gálik, J. Murín, J. Paulech

Piezoelectric beam finite element and its reduction to state space model
V. Kutis*, J. Paulech, G. Galik, J. Murin, V. Goga

Numerical study of mechanical degradation in carbon-coated graphite active particles of Li-ion battery anodes
J. Marin-Montin*, F. Montero-Chacón

17:30 - 19:30 (Europe/Madrid), Room 6
IS18A - High-Fidelity Methods for Fluid-Structure Interaction and Aeroelasticity
Organized by: M. Lahooti, R. Palacios and S. J. Sherwin

KEYNOTE - Coupled Problems in Control Co-Design of Large Wind Farms
F. Sotiropoulos*, C. Santoni

Numerical simulation of fluid-structure interaction cases on unstructured grid with dynamic mesh adaptation
T. Fabbri*, G. Balarac, P. Benard, V. Moureau

Modeling of the perivascular flow during sleep using a fluid poroelastic structure interaction approach
A. Vallet*, K. Kuchta, L. Bojarskaite, D. Bjørnstad, R. Enger, K. Mardal

Sensitivity of the least stable modes for passive control of the flow around an elastically-mounted circular cylinder
D. Dolci*, B. Carmo

Multi-physics Simulations of a Wind Turbine in Icing Conditions
F. Caccia*, V. Motta, A. Guardone

17:30 - 19:30 (Europe/Madrid), Room 7
IS31B - Algorithmic and software advances in coupling methods for climate models
Organized by: P. Bochev and R. Jacob

The Interface-Flux-Recovery (IFR) Method for Conservative and Stable Coupling Schemes in Geophysical Fluids and Mechanics
C. Sockwell*, K. Peterson, P. Kuberry, P. Bochev

Advances in modeling the termo-mechanical state of ice sheets
M. Perego*

Benchmarking the quality of the regridding functionality for different coupling software used in Earth System Modelling
S. Valcke*, A. Piacentini, G. Jonville

Earth System Remap using Generalized Moving Least Squares (GMLS) in Conjunction with Clip and Assured Sum (CAAS)
P. Kuberry*, K. Peterson, P. Bochev

Hybrid and fully online remappers for coupled Climate workflows
V. Mahadevan*, I. Grindeanu, J. Sarich, R. Jacob

Wednesday, 16-06-2021

09:00 - 11:00 (Europe/Madrid), Room 1
IS04A - Advances in Multiphysics Modelling and Simulation of Electromagnetic Systems
Organized by: F. Moro and I. Niyonzima

Composite materials for electromagnetic shielding applications: multiscale modeling via semi-analytical homogenization techniques
G. Al Achkar*, L. Pichon, L. Daniel

A POD Accelerated Approach for the Simulation of 3D Magneto-Mechanical Problems with Application to MRI Scanners
P. Ledger*, M. Seoane, A. Gil, M. Mallett, S. Zlotnik

Solution of Electromagnetic Problem for an Application in Advanced Pultrusion Processes
P. Akishin*, E. Barkanov, M. Graf, R. Emmerich

A FEM-BEM coupling for the modeling of linear magnetoelectric effects in composite structures
A. Urdaneta Calzadilla*, O. Chadebec, N. Galopin, I. Niyonzima

Computational analysis of tibial bone remodelling under electrical stimulation considering the piezoelectric properties
Y. Bansod*, M. Kebbach, D. Kluess, R. Bader, U. van Rienen

Finite Element modeling of beam coupling impedances in particle accelerators
E. Gjonaj*

09:00 - 11:00 (Europe/Madrid), Room 2
IS06 - Advances in Unfitted Mesh Methods for the Resolution of Computational Fluid Dynamics and Fluid-Structure Interaction Problems
Organized by: R. Rossi, R. Zorrilla, R. Wüchner and A. Larese

KEYNOTE - Simulating Moving Boundary Problems with the (Weighted) Shifted Boundary Method
G. Scovazzi*, O. Colomés, L. Nouveau, K. Li, L. Nouveau, D. Xu

Eulerian Formulation Using Lagrangian Marker Particles with Reference Map Technique for Fluid-structure Interaction Problem
T. Shimada*, K. Nishiguchi, C. Peco, S. Okazawa, M. Tsubokura

A Transonic Potential Solver with an Embedded Wake Approach using Multivalued Finite Elements
I. López*, E. Baez Jones, M. Núñez, R. Zorrilla, R. Rossi, K. Bletzinger, R. Wüchner

Adjoint based airfoil shape optimization using the full-potential equation on unfitted meshes
M. Nuñez*, I. Lopez, J. Baiges, R. Rossi

Preliminary results of a high-order shifted boundary method with Finite Volume and Discontinuous Galerkin schemes for hyperbolic systems
M. Ciallella*, E. Gaburro, M. Lorini, M. Ricchiuto

09:00 - 11:00 (Europe/Madrid), Room 3
IS27 - Solvers for Coupled Problems on High Performance Computers
Organized by: M. Ferronato and C. Janna

Accelerating the FlowSimulator: Profiling and scalability analysis of an industrial-grade CFD-CSM toolchain
I. Huismann*, L. Reimer, S. Strobl, J. Eichstädt, R. Tschüter, A. Rempke, G. Einarsson

Progress in Kinetic Consistent Approach for Uncompressible, Conductive Liquid MHD Models
B. Chetveryshkin, A. Saveliev, **V. Saveliev***

Kinetic Approach of MGD Models on High Performance Computing Systems
B. Chetverushkin*

09:00 - 11:00 (Europe/Madrid), Room 4
IS23B - Numerical Methods in Geomechanics'
Organized by: R. Uzuoka, K. Fujisawa, A. Murakami and M. B. Can Ulker

Bayesian inversion for the coupled detection of spatial properties and geometry in a seepage flow field
M. KOCH*, M. OSUGI, K. FUJISAWA, A. MURAKAMI

Simulating water and soil gushing around shield tunnel with Material Point Method
X. XIAOCHUANG*, F. CECCATO, D. ZHANG, M. ZHOU

A Numerical Model Based on Combined Peridynamics and Discrete Element Method for Fracture Behavior of Geomaterials
Y. Fukumoto*, T. Shimbo

Thermoelastic Analysis of Enhanced Geothermal Systems Using a Fully Coupled Thermo-Hydro-Mechanical Model
M. Aliyu*, C. Hills

Coupling CAD and BEM for simulations in geomechanics

G. Beer, C. Duenser, **V. Mallardo***

09:00 - 11:00 (Europe/Madrid), Room 5
IS08A - Advanced Solvers for Linear or Non-Linear Poromechanics
Organized by: F. Radu and P. Zunino

Space-Time Finite Element Methods for Fully Dynamic Pororelasticity and Related Problems
M. Bause*, U. Köcher, M. Anselmann

Robust preconditioners for perturbed saddle-point problems: Application to the four-field Biot equations
W. Boon*, M. Kuchta, K. Mardal, R. Ruiz-Baier

Block-partitioned solvers for a fully dynamic poromechanics model.
J. Both*, N. Barnafi, F. Radu, P. Zunino, A. Quarteroni

Re-polarisation of macrophages within a multi-scale moving boundary tumour invasion model
D. Trucu*, S. Suveges, R. Eftimie

09:00 - 11:00 (Europe/Madrid), Room 6
IS15A - Coupling Strategies in Multi-Physics Codes
Organized by: M. Celigueta Jordana

The Coupling Concepts Behind PreCICE
B. Uekermann*

Realizing CoSimulation in and with a multiphysics framework
P. Bucher*, A. Ghantasala, P. Dadvand, R. Wüchner, K. Bletzinger

FEMuS-Platform: a numerical platform for multiscale and multiphysics code coupling
A. Chierici*, G. Barbi, G. Bornia, D. Cerroni, L. Chirco, D. Roberto, V. Giovacchini, S. Manservisi

Surrogate-aided quasi-Newton techniques for fluid-structure interaction
N. Delaissé*, D. Fauconnier, J. Degroote

Performance Impact of the Newton Iterations per Solver Call in Partitioned Fluid-Structure Interaction
T. Spenke*, N. Hosters, M. Behr

09:00 - 11:00 (Europe/Madrid), Room 7
IS07 - Advanced Methods in Cyber-Physical Systems: Toward Internet-Of-Thing of Digital Production
Organized by: D. Baroli

A Non-Intrusive Model Reduction Method in Roller forming
D. Baroli*, J. Sandoval, C. idzik, K. Veroy, F. Piscaglia, J. lohmar, A. Posada, A. Kraemer, G. Hirt

Uncertainty Quantification for Electroporation-Based Treatment
P. Lakshmi Narasimhan*, Z. Tokoutsi, D. Baroli, M. Baragona, K. Veroy, R. Maessen

Reinforcement learning based design and optimization of pass schedules for hot rolling
C. Idzik*, A. Krämer, G. Hirt

Towards richer digital shadows with characterized explanations
A. Posada-Moreno*, H. Zhou

11:00 - 11:30 (Europe/Madrid),
BRK - Coffee Break

11:30 - 12:15 (Europe/Madrid), Room 1
PL7 - Plenary Lecture VII - F. Chinesta

Physics-based and data-driven hybrid modeling: when data enrich models and models render data smarter
F. Chinesta*

12:15 - 13:00 (Europe/Madrid), Room 1
PL8 - Plenary Lecture VIII - A. Reali

Advanced isogeometric simulations of coupled problems
A. Reali*

13:00 - 14:00 (Europe/Madrid),
BRK - Lunch Break

14:00 - 16:00 (Europe/Madrid), Room 1
IS04B - Advances in Multiphysics Modelling and Simulation of Electromagnetic Systems
Organized by: F. Moro and I. Niyonzima

Coupled formulations for the modeling of magnetostrictive materials
M. Harutyunyan*, S. Schöps

Attenuation of magnetohydrodynamic oscillations in an aluminum reduction cell using periodic structures
T. Andere*, R. Oliveira

Liquid Metal Flows with MHD Interaction in Rotating Co-axial Cylinder
R. Sasaki*, T. Fujino, H. Takana, H. Kobayashi

On the Status of Applications of a Novel Method for Magnetohydrodynamic Simulations on High Performance Computational Systems in

Astrophysics and Cosmology
B. Chetverushkin*, A. Saveliev, V. Saveliev

A Novel Electric Formulation for Solving Time-harmonic Eddy Current Problems with Multiply-Connected Domains
F. Moro*, L. Codecasa

14:00 - 16:00 (Europe/Madrid), Room 5
IS08B - Advanced Solvers for Linear or Non-Linear Poromechanics
Organized by: F. Radu and P. Zunino

Analysis and approximation of a linearized poromechanics problem: compressible and incompressible cases
M. Barré*, C. Grandmont, P. Moireau

Efficient solution of isogeometric analysis for poroelasticity
Á. Pé*, C. Rodrigo, F. Gaspar

An enhanced fixed-stress preconditioner for coupled poroelasticity
H. T. Honório*, M. Ferronato, M. Frigo, F. W. Giacomelli, C. R. Maliska

Partitioned methods for fluid-porohyperelastic structure interaction based on Robin-Robin transmission conditions
A. Seboldt, O. Oyekole, J. Tambaca, **M. Bukac***

14:00 - 16:00 (Europe/Madrid), Room 2
IS19A - Mesh Generation for Coupled Problems
Organized by: S. Shontz and L. Silva

A level-set based mesh adaptation technique for mass conservative ice accretion in unsteady simulations
A. Donizetti*, B. Re, A. Guardone

Coupling geometry and simulation for aerodynamic shape optimisation: an isogeometric approach
S. Pezzano*, R. Duvigneau, M. Binois

Efficient parallel algorithms for coupled fluid-particle simulation
G. Baldan*, T. Bellosta, A. Guardone

Goal-based adaptive mesh control of coupled stochastic-deterministic errors for viscous flows
A. Belme*, F. Alauzet, A. Dervieux

14:00 - 16:00 (Europe/Madrid), Room 3
IS26A - Recent Advances in Model and Complexity Reduction for Coupled Problems
Organized by: K. Urban and S. Glas

Model Reduction for Kinetic Equations
S. Glas*

Model Order Reduction for Fluid Structure Interaction problems: state of the art and advances
G. Rozza*, M. Nonino

Structure-Preserving Model Order Reduction for a port-Hamiltonian-based Fluid-Structure Interaction Model of a Classical Guitar
J. Rettberg*, D. Wittwar

Structure-preserving reduced basis methods for parametric Hamiltonian dynamical systems
C. Pagliantini*

Model order reduction of realistic cardiovascular flow by the Reduced Basis Element Method.
S. Deparis, **L. Pegolotti***

Neural-Network-based Nonlinear Model Order Reduction for Parameterized PDEs: Methods, Advances and Problems
L. Ernst*

14:00 - 16:00 (Europe/Madrid), Room 4
IS23C - Numerical Methods in Geomechanics'
Organized by: R. Uzuoka, K. Fujisawa, A. Murakami and M. B. Can Ulker

Performance of large diameter storage structures in deep exothermic waste repository
M. Alonso*, J. Vaunat, M. Vu, A. Gens, M. Mánica

Explicit asynchronous absorbing layers for seismic wave propagation in 3D unbounded domains
S. LI*, M. Brun, I. Djeran-Maigre

A coupled elasto-plasto-damaged formulation for ordinary concrete at the meso-scale with explicit modelling of entrapped air macropores.
G. Mazzucco, **B. Pomaro***, V. A. Salomoni, C. E. Majorana

14:00 - 16:00 (Europe/Madrid), Room 7
IS21A - Multi-Physics Simulations With the Coupling Library preCICE
Organized by: B.Uekermann, M. Mehl and G. Chourdakis

An introduction to the preCICE coupling library
I. Desai*, B. Uekermann

Resin Transfer Molding (RTM) of fiber-reinforced polymer sandwich parts: mold filling simulations with fluid structure interaction
J. Seuffert*, L. Kaerger, F. Henning

Coupled multibody-mid fidelity aerodynamic solver for tiltrotor aeroelastic simulation
A. Cocco*, A. Savino, A. Zanotti, A. Zanoni, P. Masarati, V. Muscarello

Coupling multi-body and fluid dynamics analysis with preCICE and MBDyn
C. Caccia*, P. Masarati

16:00 - 16:30 (Europe/Madrid),
BRK - Coffee Break

16:30 - 18:30 (Europe/Madrid), Room 2
IS19B - Mesh Generation for Coupled Problems
Organized by: S. Shontz and L. Silva

Generation of High-Order Tetrahedral Meshes from Patient-Specific Geometries for use in Cardiac Biomechanics Simulation
F. Mohammadi, B. Wentz, **S. Shontz***, C. Linte

The generation of unit P2 meshes \\ Error estimation and mesh adaptation
R. Zhang*, A. Johnen, J. Remacle, A. Bawin

Coupling of numerical models of mesh generation and heat transfer of a tree trunk in a forest fire environment
E. Conceição*, J. Gomes, M. Lúcio, J. Raposo, D. Viegas, M. Viegas

Multiscale simulation of void growth using automatic anisotropic adaptive meshing and a level finite element approach
L. Le Gohebel*, L. Silva, S. Le Corre, H. Digonnet, T. Nguyen, S. Colliou

16:30 - 18:30 (Europe/Madrid), Room 6
IS15B - Coupling Strategies in Multi-Physics Codes
Organized by: M. Celigueta Jordana

Simulation of TALL-3D experimental facility with a multiscale and multiphysics computational platform
G. Barbi*, A. Cervone, A. Chierici, L. Chirco, R. Da Via`, F. Franceschini, V. Giovacchini, S. Manservisi

Coupling strategies for three phase simulation of sloshing of ponding water on a flexible membrane with wind excitation
N. Kodunthirappully Narayanan*, R. Wüchner, J. Degroote

Investigation of the efficiency of semi-implicit solver for fuel-droplet-laden compressible flow
Y. Cho*, R. Bale, M. Tsubokura, N. Oshima

Thermal hydrayulics and neutronic codes coupling for the analysis of a Lead Fast Reactor
V. Giovacchini*, G. Barbi, A. Chierici, M. Lanconelli, S. Manservisi

16:30 - 18:30 (Europe/Madrid), Room 7
IS21B - Multi-Physics Simulations With the Coupling Library preCICE
Organized by: B.Uekermann, M. Mehl and G. Chourdakis

AWJC Nozzle simulation by 6-way coupling of DEM+CFD+FEM using preCICE coupling library
P. Adhav*, X. BESSERON, A. ROUSSET, B. PATERS

Aeroelastic simulation of slender wings for electric aircraft: a partitioned approach with DUNE and preCICE
M. Firmbach*, R. Callies

Numerical Simulation of Fluid-Structure Interaction for Thin Flat Delta Wing at Transonic Speed based on Opensource Software
Y. Takahashi*

Enabling a Multi-Scale Electro-Mechanical Skeletal Muscle Model for High-Performance Computing Using Volume Coupling.
B. Maier*, D. Schneider

16:30 - 18:30 (Europe/Madrid), Room 3
IS26B - Recent Advances in Model and Complexity Reduction for Coupled Problems
Organized by: K. Urban and S. Glas

Adaptive Trust-Region Reduced Basis Approximation for PDE-Constrained Parameter Optimization
S. Banholzer, T. Keil, L. Mechelli, M. Ohlberger, F. Schindler,**S. Volkwein***

Randomized Local Model Order Reduction for Nonlinear PDEs
K. Smetana*, T. Taddei

Registration-based model reduction of parameterized PDEs with sharp gradients
T. Taddei*, L. Zhang

Space-time variational methods for parabolic optimal control control problems
N. Beranek*

Space-time variational methods for parabolic optimal control problems - Numerical aspects and implementation
A. Reinhold*

Adaptive model reduction for coupled nonlinear parametric dynamical systems
S. Chellappa*, L. Feng, P. Benner

16:30 - 18:30 (Europe/Madrid), Room 5
IS34B - Multiphysics Problems
Organized by: G. Rozza, A. Larese and S. Perotto

On the Stability of a Steady Convective Flow in a Vertical Layer of a Chemically Reacting Fluid
A. Gritsans, V. Koliskina, **A. Kolyshkin***, F. Sadyrbaev

Comparison between experimental results and numerical simulations for a high frequency friction rig. Effect of fretting-wear on dynamic analysis.
F. Tubita*, A. Fantetti, F. Thouverez, L. Blanc

Nuclear Reactor Pressure Thermal Shock Simulation
G. Gálik*, V. Kutiš, J. Paulech, V. Goga

Modelling of water penetration and hygro-expansion in a paper sheet

N. Dave*, R. Peerlings, T. Massart, M. Geers

16:30 - 18:30 (Europe/Madrid), Room 4

IS22 - Nonlocal Interface Problems for the Simulation of Heterogeneous Materials and Media

Organized by: M. D'Elia

Nonlocal-nonlocal and local-nonlocal interface models
G. Capodaglio, M. D'Elia, C. Glusa, **M. Gunzburger***

Analysis of Coupling Approaches for Classical Linear Elasticity and Non-local Models
S. Prudhomme*, P. Diehl

Overall Equilibrium in the Coupling of Peridynamics and Classical Continuum Mechanics
G. Ongaro, **P. Seleson***, U. Galvanetto, T. Ni, M. Zaccariotto

A Fractional Model for Anomalous Diffusion with Increased Variability
M. D'Elia, **C. Glusa***

Phase-field models with nonlocal interactions in the context of solidification
O. Burkovska*

Nonlocal Models with subdomain-dependent Kernels
C. Vollmann*, V. Schulz

16:30 - 18:30 (Europe/Madrid), Room 1

IS18B - High-Fidelity Methods for Fluid-Structure Interaction and Aeroelasticity

Organized by: M. Lahooti, R. Palacios and S. J. Sherwin

KEYNOTE - High-Fidelity Flexible Multibody Aeroelasticity Framework for Bio-inspired Drones and Unmanned Air Vehicles
R. Jaiman*

Computational Fluid-Structure Interaction Framework for Simulating Characteristic Deformations in Insect Flapping Wings
M. Onishi*, D. Ishihara

Multi-physics simulation of deicing pneumatic system
A. Rausa*, A. Shvarts, A. Guardone, L. kaczmarczyk, C. pearce

Numerical Study on the Fluid-Structure Interaction and Aerodynamic Noise Radiation of a Membrane Airfoil.
E. Kolb*, M. Schäfer

High-fidelity aeroelastic simulation of flexible wings in separated flows
M. Lahooti*, R. Palacios, S. Sherwin