

**EUROPEAN
MECHANICS
SOCIETY**

**COLLOQUIUM 584
MULTI-UNCERTAINTY AND MULTI-SCALE METHODS
AND RELATED APPLICATIONS**

14 September – 16 September 2016, Portugal

Scientific program

Wednesday, September 14

Room B032

Morning

08:30 – 09:00

Registration and check-in

09:00 – 09:30

Welcome Remarks

09:30 – 10:30

Plenary Session: **Marc Geers** | Eindhoven University of Technology | ***Modeling of interfaces in engineering materials across the scales***

10:30 – 10:50

Chris Pearce | University of Glasgow | ***Nonlinear micro-mechanical response of fibre-reinforced polymer composites including matrix damage and fibre-matrix decohesion***

10:50 – 11:10

George Stefanou | Dept. of Civil Engineering , Aristotle University of Thessaloniki | ***Determination of the apparent properties and RVE size of spatially random composites***

11:10 – 11:40

Coffee Break

11:40 – 12:00

Jacek Ptaszny | Institute of Computational Mechanics and Engineering, Silesian University of Technology, Poland | ***Evaluation of the fast multipole boundary element method efficiency in numerical homogenization***

12:00 – 12:20 **Wengang Zhang** | School of Civil Engineering, Chongqing University, China | ***Probabilistic assessment of serviceability limit state of diaphragm walls for braced excavation using mars_mcs***

12:20 – 12:40 **Wolfgang Graf** | Technische Universität Dresden | ***Numerical structural design concepts with polymorphic uncertain data***

12:40 – 13:00

Abdibekova Aigerim | Al-Farabi Kazakh National University | ***Modelling of turbulence energy decay based on hybrid methods***

13:00 – 14:00 *Lunch*

Wednesday, September 14

Room B032

Afternoon

14:00 – 15:00

Plenary Session: **J. Oliver** | Technical University of Catalonia (UPC/Barcelona Tech)

International Center for Numerical Methods in Engineering (CIMNE), Barcelona, Spain | ***Hyper-reduced order modelling (HPROM) in multiscale fracture***

15:00 – 15:20

Caglar Oskay | Vanderbilt University | ***Accelerated reduced order homogenization of polycrystal plasticity***

15:20 – 15:40

Claudia Brito de Carvalho Bello | Department of Architecture Construction Conservation, Università IUAV di Venezia | ***Experimental on three-leaf brick masonry walls: the scale factor***

15:40 – 16:00

Duanzhong Zhang | Los Alamos National Laboratory | ***Multiscale formulation implemented using the dual domain material point method***

16:00 – 16:20

Liu Liu | Institute of Natural Sciences, Department of Mathematics Shanghai Jiao Tong University, Shanghai and Department of Mathematics, University of Wisconsin | ***An asymptotic-preserving stochastic Galerkin method for the semiconductor Boltzmann equation with random inputs and diffusive scalings***

16:20 – 17:20

Plenary Session: **Michael Beer** | Institute for Risk and Reliability, Leibniz University Hannover, Germany; Institute for Risk and Uncertainty, University of Liverpool, United Kingdom; Shanghai Institute of Disaster Prevention and Relief, Tongji University, China | ***Coherent Models for Aleatory and Epistemic Uncertainties***

17:20

Departure from FEUP

17:30

Welcome Cocktail @Reitoria

Thursday, September 15

Room B032

Morning

09:00 – 10:00

Plenary Session: **Wing K. Liu** | Northwestern University | ***Modeling and Simulation Challenges in Materials Design for Additive Manufacturing Applications***

10:00 – 10:20

Niraj Kumar Jha | Leibniz University Hannover | ***Fatigue life prediction of composite structures based on progressive damage analysis***

10:20 – 10:40

Saida Dorbani | Built Environment Lab. (LBE), Faculty of Civil Engineering, University of Sciences and Technologies Houari Boumediene, Algiers, Algeria | ***The seismic behavior of RC buildings with uncertain natural period and epicentral distance***

10:40 – 11:10

Coffee Break

11:10 – 11:50

Plenary Session: **Ron Bates** | Rolls Royce plc | ***Multi-Scale Robust Design for Product Development***

11:50 – 12:10

Yoshihiro Kanno | Tokyo Institute of Technology Japan | ***Redundancy optimization of trusses against uncertainty in structural damage***

12:10 – 12:30

Shaoqing Cui | Zienkiewicz Centre for Computational Engineering, College of Engineering, Swansea University | ***Stochastic reconstruction of heterogeneous media***

12:30 – 12:50

Shi Jin | University of Wisconsin-Madison | ***Uncertainty quantification for multiscale hyperbolic and kinetic equations with uncertain coefficients***

12:50 – 14:00

Lunch

Thursday, September 15

Room B032

Afternoon

14:00 – 15:00

Plenary Session: **M.Papadrakakis** | Institute of Structural Analysis & Antiseismic Research - National Technical University Athens, Greece | ***High Performance Methods for Non-Intrusive and Intrusive Multiscale Stochastic Simulations***

15:00 – 15:20

Srihari Dodla | Wolfson School of Mechanical, Electrical and Manufacturing Engineering, Loughborough University | ***Finite element simulations of plastic deformation behavior of textured ti64***

15:20 – 15:40

Jouni Freund | Aalto University, School of Engineering, Finland | ***Two-scale modelling of layered plates***

15:40 – 16:00

Deepanshu Sodhani | Institute of Applied Mechanics, RWTH Aachen University | ***Artificial textile reinforced tubular aortic heart valves -multi-scale modelling and experimental validation***

16:00 – 16:30

Coffee Break

16:30 – 16:50

Jie Yuan | Aerospace Division, Cranfield University; Airbus Operations Ltd, Bristol; Aerospace Engineering, University of Bristol | ***A framework of computational reduction techniques for probabilistic margin assessment in aircraft design***

16:50 – 17:10

Alena A. Ayzenberg | University of Bergen | ***Tpot & twsm for 3d multiphysics multi-scale models with complex interfaces. Uu-model solution separation***

17:10 – 17:30

João Cardoso | UNIDEMI, Dep. Mechanical and Industrial Eng, FCT/UNL, Portugal | ***Structural optimization of composite laminates including uncertainty***

17:30 – 17:50 **Fermin Otero** | Institute of Science and Innovation in Mechanical and Industrial Engineering (INEGI) | *Efficient multi-scale strategy for material non-linear analysis through a computational homogenization*

17:50 – 18:50 Discussion Panel

19:00 *Departure from FEUP*

20:00 *Conference Banquet @ Cálem Port Wine Cellar*

Friday, September 16

Room B032

Morning

09:00 – 09:20 **Jan Chleboun** | Faculty of Civil Engineering, Czech Technical University in Prague | *A fuzzy set approach to uncertain functions*

09:20 – 09:40 **Thanusha M.T** | Indian Institute of Technology, Madras | *Optimum sampling technique for subcritical nonlinear aeroelastic system with discontinuous response surface*

09:40 – 10:20

Pedro Coelho | UNIDEMI, Universidade Nova de Lisboa | ***Laminates with fibre lay-out and lay-up sequence optimized for stiffness via multiscale topology optimization***

10:20 – 10:40

Ashutosh Gandhi | Institute of Mechanics and Shell Structures, TU Dresden, Germany| ***Influence of microstructure morphology on multi-scale modeling of low-alloyed TRIP steels***

10:40 – 11:10

Coffee Break

11:10 – 11:30

José Reinoso-Cuevas | Elasticity and Strength of Materials Group, School of Engineering, University of Seville | ***Delamination of structured interfaces using a novel anisotropic cohesive interface formulation***

11:30 – 11:50

Igor Lopes | Department of Mechanical Engineering, Faculty of Engineering, University of Porto | ***A mixed parallel strategy for the solution of homogenization-based multi-scale problems***

11:50 – 12:10

Dimitrios Savvas | School of Civil Engineering, National Technical University of Athens | ***Homogenization of two-phase composites with random material properties***

12:10 – 12:30

Ramin Mirzazadeh | Politecnico di Milano, Department of Civil and Environmental Engineering |
Uncertainty quantification of the micro-mechanical properties of polysilicon films

12:30 – 12:50

Rodrigo Carvalho | Department of Mechanical Engineering, Faculty of Engineering, University of Porto |
Yielding behaviour of anisotropic porous materials through computational homogenization

12:50 – 14:00

Lunch

Friday, September 16

Room B032

Afternoon

14:00 – 15:00

Plenary Session: **Souza Neto** | Civil Engineering College of Engineering

Swansea University | *The Method of Multiscale Virtual Power. A Variational Recipe for Derivation of RVE-based Multiscale Models*

15:00 – 15:20

Daniel de Bortoli | Swansea University Zienkiewicz Centre for Computational Engineering | ***Multi-scale modelling of stress-induced martensitic transformations***

15:20 – 15:40

Ielizaveta Khometska | Czech Technical University in Prague, Faculty of Civil Engineering | ***Uncertainty in the modeling of magnetostrictive materials and magnetostrictive energy harvesters***

15:40 – 16:00

Thiago Doca | University of Brasilia | ***Assessment of a contact homogenization method for the analysis of abrasive wear problems***

16:00 – 16:20

Alena A. Ayzenberg | University of Bergen | ***Generalized Lippmann-Schwinger equation for initial boundary value problem in 3d blocky multiphysics multi-scale media***

16:20 – 16:40

Muhannad Aldosary | Swansea University | ***Structural reliability analysis- a review and comparison study***

16:40 – 17:00

Coffee Break

17:20

Closing Remarks