# TS 1: MONDAY MORNING, APRIL 1

**Plenary Speaker**
**Harald van Brummelen**
*Adaptive Isogeometric Analysis for Elasto-Capillary Fluid-Solid Interaction*
8:00 – 9:00 am, Red Lacquer

| 09:30 AM | 09:50 AM | 10:10 AM | 10:30 AM | 10:50 AM | 11:10 AM |
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| **Red Lacquer** | **#M404** | **Computational Methods in Environmental Fluid Mechanics, Chair(s): Ethan Kubatko** | | | |
| **Keynote presentation:** High-resolution, Parallel Simulation of Flow in River Networks<br><br>*Babak Poursartip*, Clint Dawson* | | Development of a Fluid-structure Interaction Model Considering Structural Damage Based on FEM<br><br>*Guoming Ling*, Mao Kurumatani, Junichi Matsumoto, Kazuo Kashiyama* | Towards an Adaptive Discontinuous Galerkin Storm Surge Model<br><br>*Ethan Kubatko*, Omar El-Khoury* | A Finite Element Shallow Water Flow Model with Subgrid Corrections Accounting for Unresolved Topography<br><br>*Damrongsak Wirasaet*, Andrew Kennedy, Joannes Westerink* | |
| **Salon #2** | **#M202** | **Multiscale and Multiphysics Approaches in Electrochemical Processes, Chair(s): Tae-Rin Lee** | | | |
| Electromagnetic Field Computation in Unbounded Domain<br><br>*Junhong Jo, Hong-Kyu Kim, Chang-Seob Kwak, Do Wan Kim** | Simulations of Large Scale Bubble Columns Using Quadrature Based Moment Methods<br><br>*Jeff Heylmun*, Alberto Passalacqua* | Immersed Boundary Method in a Taylor-Couette Crystallizer for Particle Formation<br><br>*Jang Gyun Lim*, Moon Ki Kim, Tae-Rin Lee* | Multiscale Approach for Predicting Graphene Exfoliation Process in Shear Flow<br><br>*Tae-Rin Lee** | | |
| **Salon #3** | **#M108** | **Variational Stabilization, Structure- and Positivity-preserving Techniques for Complex Flows, Chair(s): Gabriel Barrenechea** | | | |
| **Keynote presentation:** Dynamic Term-by-Term Stabilized Finite Element Formulation Using Orthogonal Subgrid-Scales for the Incompressible Navier-Stokes Problem<br><br>*Ramon Codina*, Ernesto Castillo* | | Enforcing Positivity with Bernstein Polynomials<br><br>*Robert Kirby*, Larry Allen* | A Stabilized Virtual Element Method for the Unsteady Incompressible Navier-Stokes Equations<br><br>*Diego Irisarri, Guillermo Hauke** | Large Eddy Residual Based Variational Multi-Scale Turbulent Model for Low-Mach Number Variable Density Flow<br><br>*Lixing Zhu*, Arif Masud* | High-Reynolds Compressible Flows and Aerodynamics Simulations with FEniCS-HPC<br><br>*Massimiliano Leoni*, Margarida Moragues-Ginard, Johan Jansson* |

# TS 1: MONDAY MORNING, APRIL 1

| 09:30 AM | 09:50 AM | 10:10 AM | 10:30 AM | 10:50 AM | 11:10 AM |
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| **Salon #4&9** | **#M302** | **Multi Physics/Scale Modeling for Additive Manufacturing, Chair(s): Jinhui Yan** | | | |
| Thermo-Mechanical Phase Evolution During Polymer Curing in Additive Manufacturing<br><br>*Ahmad AlNaseem*, Arif Masud* | Multi-Material Topology Optimization with Many Local Constraints: A General Approach with Material and Geometric Nonlinearities<br><br>*Xiaojia Shelly Zhang, Glaucio Paulino, Adeildo Ramos Jr., Weichin Li** | Deep Material Networks for Creating Microstructural Database of Polycrystalline Materials in Additive Manufacturing<br><br>*Zeliang Liu** | Quantification of Energy Coupling Efficiency and Melt Pool Dynamics during Intense Laser Irradiation of Aluminum Alloy<br><br>*Zhengtao Gan*, Wing Liu, Tao Sun, Lichao Fang* | Defect Characterization and Fatigue Behaviors of Additively Manufactured Component via In Situ Synchrotron X-ray Tomography<br><br>*S.C. Wu*, Y.N. Hu, G.Z. Kang, S.Z. Song, Z.K. Wu, C. Xie* | |
| **Salon #5&8** | **#M106** | **Unfitted Discretization Methods, Chair(s): G. Scovazzi** | | | |
| **Keynote presentation:** Non-matching Finite Element Methods for Smooth and Rough Fluid-Structure-Contact Interaction<br><br>*Wolfgang A. Wall*, Christoph Ager* | | Embedded Stabilized Methods for Free Surface Flow problems<br><br>*Oriol Colomés*, Guglielmo Scovazzi, Leo Nouveau* | The Shifted Boundary Method for Embedded Domain Computations: Application to Solid Mechanics<br><br>*Nabil Atallah*, Guglielmo Scovazzi* | The Shifted Interface Method: A Flexible Approach to Embedded Interface Computations<br><br>*Kangan Li*, Nabil Atallah, Guglielmo Scovazzi, Alex Main* | 2-D Finite Element Analysis on Incompressible Couple-stress Stokes Flow via Lagrange Multipliers<br><br>*Jingye Tan** |
| **Salon #6&7** | **#M103** | **Computational Fluid Mechanics with Free and Moving Boundaries: Methods and Applications, Chair(s): Rekha Rao** | | | |
| **Keynote presentation:** Coupled Multiphase and Fluid-Structure Interaction Methods for Gas-Liquid-Solid Three-Phase Interactions<br><br>*Lucy Zhang** | | Blast Loads on Structures Including the Effects of Fluid Structure Interaction<br><br>*Manish Kumar*, Nartu Manoj Kumar* | Two-Phase Flow and Structural Deformation Models for Nanoimprint Lithography<br><br>*Andrew Cochrane*, Kristianto Tjiptowidjojo, P. Randall Schunk* | Experiments on Alya's Different Stabilization Schemes and Numeical Methods<br><br>*Qiyue Lu*, Alfonso Santiago, Seid Koric* | |

# TS 2: MONDAY AFTERNOON, APRIL 1

| Semi-plenary Speakers: 12:50 – 1:30 PM |
|---|
| **Tarek Zohdi**: *Modeling and Simulation of Next Generation 3D Printing Systems for Functionalized Materials with Machine-Learning System Design,* Salon 3 |
| **Paul Fischer**: *Recent Advances in the SEM for Turbulent Flow Simulations,* Salon 6/7 |

| 01:45 PM | 02:05 PM | 02:25 PM | 02:45 PM | 03:05 PM | 03:25 PM |
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| **Red Lacquer** | **#M404** | **Computational Methods in Environmental Fluid Mechanics, Chair(s): TBA** | | | |
| **Keynote presentation:** Global Tide and Surge Modelling with Locally High Resolution Coastal Insets<br>*William Pringle*, Keith Roberts, Joannes Westerink, Dam Wirasaet* | | A Local Discontinuous Galerkin Method for Richards' Equation Considering Capillary Barrier Effect<br>*Yilong Xiao*, Ethan Kubatko, Edward McCoy* | Analysis of the Interaction between a Wave Driven Flow and Different Arrays of Structures<br>*Joaquin Moris*, Andrew Kennedy, Mayilvahanan AlaganChella, Joannes Westerink* | Effects of CYGNSS-derived Parametric Wind Fields on Storm Surge Modeling<br>*Younghun Kang*, Ethan Kubatko* | |
| **Salon #2** | **#M203** | **Computational Multiphase Flow for Energy Systems, Chair(s): Madhava Syamlal and Reza Mostofi** | | | |
| A 4-Phase Model and Simulation of Methane Production from a Gas Hydrate Reservoir<br>*Deniz Hinz*, Hamid Arastoopour, Javad Abbasian* | Enabling Lattice Boltzmann Method for Large-scale Direct Numerical Simulation of Gas-solid Flow<br>*Limin Wang*, Wei Ge* | Large Scale Multiphase Flow Simulation for Techno-economic Assessment of the Novel Internally Circulating Reactor for Energy Conversion with CO2 Capture<br>*Mohammed Khan, Henri Cloete, Schalk Cloete, Shahriar Amini** | Validating the Direct Simulation Monte Carlo (DSMC) Method for Monodisperse and Polydisperse Particle Flows<br>*Andrew Hong*, Aaron Morris* | | |

# TS 2: MONDAY AFTERNOON, APRIL 1

| 01:45 PM | 02:05 PM | 02:25 PM | 02:45 PM | 03:05 PM | 03:25 PM |
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| **Salon #3** | **#M108** | **Variational Stabilization, Structure- and Positivity-preserving Techniques for Complex Flows, Chair(s): Arif Masud** | | | |
| **Keynote presentation:** Low-order Divergence-free Finite Element Methods in Fluid Mechanics<br><br>*Gabriel Barrenechea*, Alejandro Allendes, Cesar Naranjo, Julia Novo* | | Isogeometric Residual Minimization Method for Stokes Problem<br><br>*Maciej Paszynski, Marcin Los*, Quanling Deng, Victor Calo* | Automatic Variationally Stable FE and Goal-Oriented A Posteriori Error Analyses of Convection-Dominated Boundary Value Problems<br><br>*Albert Romkes*, Eirik Valseth, Victor Calo* | | |
| **Salon #4&9** | **#M302** | **Multi Physics/Scale Modeling for Additive Manufacturing, Chair(s): Zeliang Liu** | | | |
| Solidification Simulations of Additive Manufacturing Process in Alloys<br><br>*Yanping Lian** | A Solidification Microstructure Model with Fluid Film Channels for Columnar and Equiaxed Grains<br><br>*Lichao Fang*, Gregory Wagner* | A Microstructure-Informed Sintering Stress Formulation<br><br>*Brian T. Lester*, Joseph E. Bishop, Fadi Abdeljawad* | | | |
| **Salon #5&8** | **#M106** | **Unfitted Discretization Methods, Chair(s): G. Scovazzi** | | | |
| Weak Imposition of Dirichlet Boundary Conditions in Incompressible and Isentropic Flows Using Fractional Step Methods<br><br>*Samuel Parada, Joan Baiges*, Ramon Codina* | The Shifted Interface Method for Multiphase Flows Computations<br><br>*Mehdi Khalloufi*, Kangan Li, Guglielmo Scovazzi* | Adaptive Discontinuous Galerkin Immersed Boundary Methods for Compressible Navier-Stokes Simulations<br><br>*Marco Lorini*, Mario Ricchiuto* | A Variational Multiscale Method for Embedded Boundary Conditions at Immersed Boundaries<br><br>*Soonpil Kang*, Arif Masud* | Assessment of the Accuracy and Conditioning of an Extended Conformal Decomposition Finite Element Method for Fluid-Fluid Interfaces<br><br>*David Noble** | Validation and Inter-Comparison of Unfitted Methods to Air-Water-Granular Flow<br><br>*Chris Kees*, Manuel Quezada de Luna, Yong Yang* |

# TS 2: MONDAY AFTERNOON, APRIL 1

| 01:45 PM | 02:05 PM | 02:25 PM | 02:45 PM | 03:05 PM | 03:25 PM |
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| **Salon #6&7** | **#M103** | **Computational Fluid Mechanics with Free and Moving Boundaries: Methods and Applications, Chair(s): Patrick Anderson** | | | |
| An Arbitrary Lagrangian-Eulerian Finite Element Scheme for Viscous Sloshing in One Phase | Artificial Sinks/Sources in Finite Element Method within Arbitrary Lagrangian-Eulerian Framework | Transient 3D Finite Element Method for Predicting Extrudate Swell of Domains Containing Sharp Edges | A Locally Adaptive Mesh Densification Scheme for Resolving Singularities in Multi-Scale Free Surface Flows | Development of Wafer-Scale Model for Nanopatterning in Crystalline Silicon | |
| *Laura Battaglia, Mario Storti, Ezequiel López, Marcela Cruchaga** | *Filip Ivancic*, Maxim Solovchuk, Tony Wen-Hann Sheu* | *Michelle Spanjaards*, Martien Hulsen, Patrick Anderson* | *Christopher Anthony*, Osman Basaran* | *Kristianto Tjiptowidjojo*, Seok Jun Han, Sang Eon Han, P. Randall Schunk* | |

# TS 3: MONDAY EVENING, APRIL 1

| 04:00 PM | 04:20 PM | 04:40 PM | 05:00 PM | 05:20 PM | 05:40 PM |
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| **Red Lacquer** | **#M404** | **Computational Methods in Environmental Fluid Mechanics, Chair(s): TBA** | | | |
| Using Overlaid Elongated Elements for Hydrodynamic Simulations of Narrow Channels in Coastal Areas<br><br>*Maria Contreras*, Damrongsak Wirasaet, Joannes Westerink, Rick Luettich* | Coupled Discontinuous Galerkin Methods for Evaluating Overtopping Risks Posed to Flood Barriers by Storm Waves and Surge<br><br>*Dylan Wood*, Ethan J. Kubatko, Mehrzad Rahimi, Abdollah Shafieezadeh* | A Polynomial Chaos-Based Stabilized Stochastic Shallow Water Model<br><br>*Clint Dawson, Chen Chen** | | | |
| **Salon #2** | **#M204** | **High-performance Computational Mechanics for Energy Systems, Chair(s): Shinobu Yoshimura** | | | |
| **Keynote presentation:** A Coupled Heat Transfer Simulation of Coal-Gassifier<br><br>*Tomonori Yamada, Naoto Mitsume, Shinobu Yoshimura** | | Large Scale Simulations of the Ignition Process in an Annular Combustor<br><br>*Yifan Xia, Gaofeng Wang*, Yao Zheng* | Flow-induced Vibration and Fatigue Damage of NREL5MW Blade of Offshore Wind Farm Using K-Computer<br><br>*Shinobu Yoshimura, Tomonori Yamada, Shunhua Chen*, Naoto Mitsume, Akiyoshi Iida, Chisachi Kato, Yoshinobu Yamade, Shori Orimo, Yasunori Yusa* | Large-Scale Simulation of Two-Phase Flow for Polymer Electrolyte Fuel Cells<br><br>*Masakazu Yoneda, Shoichi Tanaka*, Ryo Takayama* | Finite Element Simulation on Active Control of FSI Phenomena<br><br>*Shigeki Kaneko*, Giwon Hong, Naoto Mitsume, Tomonori Yamada, Shinobu Yoshimura* |
| **Salon #3** | **#M108** | **Variational Stabilization, Structure- and Positivity-preserving Techniques for Complex Flows, Chair(s): Albert Romkes** | | | |
| Automatic Variationally Stable Discretizations<br><br>*Victor Calo*, R. Cier, Q. Deng, A. Ern, S. Rojes, Albert Romkes* | The Variational Multiscale Method is the Underlying Theoretical Framework of Discontinuity Capturing<br><br>*Marco ten Eikelder*, Ido Akkerman, Yuri Bazilevs* | Time Stepping for the Incompressible Stokes Equations with Compatible Discrete Operators<br><br>*Riccardo Milani*, Jérôme Bonelle, Alexandre Ern* | A Variational Multiscale Method for Dynamic Viscoelasticity and Quasi-static Elasto-plasticity Using Linear Tetrahedral Elements<br><br>*Nabil Abboud*, Guglielmo Scovazzi, Oriol Colomes* | | |

# TS 3: MONDAY EVENING, APRIL 1

| 04:00 PM | 04:20 PM | 04:40 PM | 05:00 PM | 05:20 PM | 05:40 PM |
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| **Salon #4&9** | **#M302** | **Multi Physics/Scale Modeling for Additive Manufacturing, Chair(s): Yanping Lian** | | | |
| Application of Fractional Calculus in Multi-physics Modeling of Selective Laser Melting | Isogeometric Analysis of Thermal Multi-Phase Flows in Metallic Additive Manufacturing | In-situ Characterization of Fluid Dynamics in Additive Manufacturing | | | |
| *Zekun Wang*, Moubin Liu* | *Songzhe Xu*, Jinhui Yan* | *Lianyi Chen*, Tao Sun, Qilin Guo, S. Mohammad Hojjatzadeh, Luis I. Escano* | | | |
| **Salon #5&8** | **#M107** | **Advanced Computational Methods and Theories for Multi-scale and Multi-physics Problems in Solids and Fluids, Chair(s): TBA** | | | |
| A Multiscale Generalized FEM(GFEM) to Solve Advection-diffusion Problems | Reference Map Technique: Application to a Parallel Amr Eulerian Hydrocode | Discontinuous Galerkin Methods for Compressible Multi-Material Flows | | | |
| *Lishen He*, Armando Duarte, Albert Valocchi* | *Serge Ndanou*, Gary Dilts, Thomas Masser* | *Aditya Pandare*, Jozsef Bakosi, Jacob Waltz* | | | |
| **Salon #6&7** | **#M103** | **Computational Fluid Mechanics with Free and Moving Boundaries: Methods and Applications, Chair(s): Elie Hachem** | | | |
| **Keynote presentation:** Space-Time Finite Elements for Level-Set-Based Flow Simulation | | Interface Tracking Simulation of Annular Flow with Iterative In-Memory Mesh Adaptation | High Fidelity Conservative and Adaptive Levelset Method for the Simulation of Complex Two-fluid Flows | Density and Bubble Size Prediction of Polyurethane Foam Using a Population Balance Equation | |
| *Marek Behr*, Violeta Karyofylli* | | *Jun Fang*, Cameron Smith, Ramesh Balakrishnan, Kenneth Jansen* | *Aurélien Larcher*, Chahrazade Bahbah, Elie Hachem* | *Weston Ortiz*, Rekha Rao* | |

# TS 4: TUESDAY MORNING, APRIL 2

**Plenary Speaker**
**Jacqueline Chen**
*Towards Exascale Simulations of Turbulent Combustion Relevant to Clean and Efficient Engines*
8:00 – 9:00 am, Red Lacquer

| 09:30 AM | 09:50 AM | 10:10 AM | 10:30 AM | 10:50 AM | 11:10 AM |
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| **Red Lacquer** | **#M402** | **Minisymposium on Biological Fluid Mechanics and Soft Matter Complex Fluid Flows, Chair(s): Hao Lin** | | | |
| **Keynote presentation:** Poro-visco-elastic Medium as a Model for Biological Fluid<br>*Yuan-Nan Young** | | A Multiscale Moving Contact Line Theory: Simulation of Droplet Spreading and Cell Durotaxi<br>*Shaofan Li** | Computational Modeling of Collective Cellular Motion by Meshfree Method<br>*Jie Bai*, Liqiang Lin, Xiaowei Zeng* | Quantitative Correlation Between Tissue-level Mechanical Properties and Cellular-level Properties and Shape Statistics<br>*Ran Li*, Miao Yu, Ramsey A. Forty, Liping Liu, Hao Lin* | An Optimal Design of Artificial Water Filtration System<br>*Moon Ki Kim*, Hyun Ki Kim, Byung Ho Lee* |
| **Salon #2** | **#M201** | **Computational Science and Engineering in Electrochemical Energy Systems, Chair(s): Kyle Smith and Partha Mukherjee** | | | |
| **Keynote presentation:** Fast Prediction and Optimization of Thick-electrode Batteries<br>*Fan Wang, Ming Tang** | | A New Formulation of the Pseudo2D Battery Model Coupling Macroscopic and Microscopic Deformations<br>*Weijie Mai*, Andrew Colclasure, Kandler Smith* | Optimizing Discharge Capacity of Li-O2 Batteries by Design of Air-electrode Porous Structure: Multifidelity Modeling and Optimization<br>*Wenxiao Pan** | | |
| **Salon #3** | **#M108** | **Variational Stabilization, Structure- and Positivity-preserving Techniques for Complex Flows, Chair(s): Victor Calo** | | | |
| Implementing and Applying I(mmer)sogeometric Analysis for Fluid--Structure Interaction<br>*David Kamensky*, Yuri Bazilevs* | An Optimization-based Discontinuous Galerkin Approach for High-order Accurate Shock Tracking<br>*Matthew Zahr*, Per-Olof Persson* | Kinetic Theory for Computational Fluid Dynamics<br>*Michael Abdelmalik*, Harald van Brummelen, Tom Hughes, Irene Gamba* | On Algebraic Flux Correction in Continuous Finite Element Schemes for Problems in Plasma Physics<br>*Sibusiso Mabuza*, John Shadid, Sidafa Conde, Eric Cyr, Thomas Smith, Roger Pawlowski, Dmitri Kuzmin* | Modelling Tornado-like Vortices<br>*Theodoros Katsaounis*, Athanasios Tzavaras, Ioanna Mousikou* | |

# TS 4: TUESDAY MORNING, APRIL 2

| 09:30 AM | 09:50 AM | 10:10 AM | 10:30 AM | 10:50 AM | 11:10 AM |
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| **Salon #4&9** | **#M303** | **Computational Methods for Multiphase Fluid Dynamics in Additive Manufacturing, Chair(s): Mario Martinez** | | | |
| **Keynote presentation:** A Balanced-force Level Set Method on Unstructured Meshes for Modelling Powder-scale Additive Manufacturing Processes | | Multi-phase Thermo-Fluid Dynamics Simulation of Laser Powder Bed Fusion Processes | Quantification of Dynamic Process and Material Parameters in Laser Metal Additive Manufacturing Using High-speed X-ray Techniques | Uncertainty Quantification and Bayesian Calibration of a Powder-Scale Model for Selective Laser Melting | Multiphase Modelling of Laser Plume and Inert Atmosphere Flows During LPBF |
| *Stephen Lin*, Gregory Wagner, Jinhui Yan* | | *Xuxiao Li, Wenda Tan** | *Tao Sun*, Cang Zhao, Niranjan Parab, Kamel Fezzaa* | *Daniel Moser*, Mario Martinez* | *Ioannis Bitharas*, Alexander Burton, Prveen Bidare, Andrew Moore* |
| **Salon #5&8** | **#M112** | **Meshfree and Particle Methods: Recent Advances in Applications and Theory, Chair(s): TBA** | | | |
| Discretely Conservative Meshfree Principles for Conservation Laws | Advances in the Approximation Theory for Generalized Moving Least Squares | Kernel Based Uncertainty Quantification for Fluid Problems | A Local Lagrangian Gradient Smoothing Method for Fluids and Fluid-like Solids: A Novel Particle Method | Eulerian Reproducing Kernel Particle Method for Shock Modeling | |
| *Nathaniel Trask*, Mauro Perego, Pavel Bochev* | *Mauro Perego*, Pavel Bochev, Nathaniel Trask, Peter Bosler, Paul Kuberry, Kara Peterson* | *Christian Rieger** | *Zirui Mao*, GR. Liu* | *Tsung-Hui Huang*, JS Chen* | |
| **Salon #6&7** | **#M103** | **Computational Fluid Mechanics with Free and Moving Boundaries: Methods and Applications, Chair(s): Jeremy Lechman** | | | |
| **Keynote presentation:** Optimal Microfluidic Device Design for Efficient Red Blood Cell Sorting | | Modeling and Simulation of Droplet Impact and Spreading on Polarized and Non-polarized Teflon Surfaces | A Level Set Finite Element Formulation for Microdroplets under Severe Capillary Forces with a Zienkiewicz Element for Interface Representation | Elucidating Metal Powder Rheology via Discrete Element Simulations and Mechanically Stirred Powder Rheometry | Simulating Dense Granular Flow over a Rigid Obstruction Using the ?(I)-Rheology |
| *Gokberk Kabacaoglu*, George Biros* | | *Vitaliy Yurkiv, Farzad Mashayek** | *Roberto Ausas*, Gustavo Buscaglia* | *Jeremy Lechman*, Dan Bolintineanu, Anne Grillet* | *Linda Gesenhues*, José J. Camata, Fernando A. Rochinha, Alvaro L.G.A. Coutinho* |

# TS 5: TUESDAY AFTERNOON, APRIL 2

| Semi-plenary Speakers: 12:50 – 1:30 PM |
|---|
| **George Karniadakis**: *Fractional Modeling of Complex Flows: Algorithms and Applications,* Salon 3 |
| **Alison Marsden**: *Personalized Simulations for Cardiovascular Disease Progression and Treatment,* Salon 6/7 |

| 01:45 PM | 02:05 PM | 02:25 PM | 02:45 PM | 03:05 PM | 03:25 PM |
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| **Red Lacquer** | **#M403** | **Multiscale Modeling in Bio-Mechanical Systems, Chair(s): TBA** | | | |
| Fluid-Structure Interaction Modeling and Simulation of Transcatheter Heart Valves | Multiscale Modeling of Nanoparticle Transport in the Vasculature: Upscaling Red-Blood Cell Models to the Continuum Scale | Shape Dependent Transport of Micro-particles in Blood Flow: from Margination to Adhesion | Cell Transport and Adhesion in Microfluidic Devices under Flow | | |
| *Ming-Chen Hsu*, Michael C.H. Wu, Heather Muchowski, Manoj Rajanna* | *Rekha Rao*, Zixiang Liu, Cyrus Aidun, Richard Martin, Kimberly Butler, Jonathan Clausen, Dan Bolintineanu* | *Ying Li*, Huilin Ye, Zhiqiang Shen* | *Jifu Tan** | | |
| **Salon #2** | **#M201** | **Computational Science and Engineering in Electrochemical Energy Systems, Chair(s): Kyle Smith and Partha Mukherjee** | | | |
| Modeling Synergistic Chemical/Mechanical Membrane Degradation in Polymer-Electrolyte Fuel-Cells | A Novel Method to Bridge Micro and Nano Scales with Application to PGM-free Electrodes in Polymer Electrolyte Fuel Cells | Porous Electrode Modeling of Redox Flow Batteries with Marcus-Hush-Chidsey Kinetics: Characterizing Operating Regimes Using Damköhler Numbers | Mathematical Modeling of a Membrane-Free Redox Flow Battery Operated with Immiscible Electrolytes | Quantifying and Analysing Transport Phenomena in Electrospun Electrodes: Direct Numerical Simulations from X-ray Tomography | |
| *Victoria Ehlinger*, Ahmet Kusoglu, Adam Weber* | *Jiangjin Liu*, Pablo A. García-Salaberri, Iryna V. Zenyuk* | *Venkat Nemani*, Kyle Smith* | *Desiree Ruiz-Martin, Daniel Moreno-Boza, Pablo A. García-Salaberri*, Marcos Vera, Rebeca Marcilla, Mario Sánchez-Sanz* | *Matthew Kok*, Rhodri Jervis, Dan Brett, Paul Shearing, Jeff Gostick* | |

# TS 5: TUESDAY AFTERNOON, APRIL 2

| 01:45 PM | 02:05 PM | 02:25 PM | 02:45 PM | 03:05 PM | 03:25 PM |
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| **Salon #3** | **#M109** | **Enhancing Flow Simulations: Stabilization, Adaptivity, Model Reduction, Chair(s): Gianluigi Rozza** | | | |
| **Keynote presentation:** Reduced Order Models for Turbulent Flows and Geometrical Parametrization<br><br>*Giovanni Stabile*, Karatzas Efthymios, Francesco Ballarin, Gianluigi Rozza* | | (Parametrized) First Order Transport Equations: Realization of Optimally Stable Petrov-Galerkin Methods<br><br>*Kathrin Smetana*, Julia Brunken, Karsten Urban* | Data Driven Approximation of Parametrized PDEs by Reduced Basis and Neural Networks<br><br>*Simone Deparis*, Niccolo Dal Santo, Luca Pegolotti* | A Data Driven Approach for Constructing Probabilistic Multi-Fidelity Surrogate Models Using Simulation Data<br><br>*Luca Bonfiglio*, George Karniadakis, Michael Triantafyllou* | |
| **Salon #4&9** | **#M303** | **Computational Methods for Multiphase Fluid Dynamics in Additive Manufacturing, Chair(s): Wenda Tan** | | | |
| Experimenting with Modeling in Mind<br><br>*Brian Simonds** | Solutal-thermocapillary Phenomena in Additive Manufacturing<br><br>*Wing Liu*, Zhengtao Gan* | Reduced Complexity Heat Transfer Models for Analysis of Powder Bed Multi-beam Laser Fusion Processes<br><br>*Nathan Farwell*, Mikhail Vorontsov, Dan Moser, Mario Martinez* | Incorporation of Melt Pool Fluid Flow in a Reduced-order Additive Manufacturing Model<br><br>*Mohammad Javad Sarfi*, Gregory Wagner* | Computational Modeling of the Laser Sintering for Polymer SLS<br><br>*Patrick Anderson*, Martien Hulsen, Caroline Balemans* | Advanced Simulation Approaches for Additive Manufacturing Stress Analysis<br><br>*Hui Huang*, Jian Chen, Zhili Feng* |

# TS 6: TUESDAY EVENING, APRIL 2

| 04:00 PM | 04:20 PM | 04:40 PM | 05:00 PM | 05:20 PM | 05:40 PM |
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| **Red Lacquer** | **#M405** | **Ecohydraulics: Advances in Modeling Flow-biota Interactions, Chair(s): TBA** | | | |
| Stratification Effects in a Sediment-Laden Vegetated Open Channel Flow | Oscillatory Flow-submerged Canopy | Rotations of Finite-sized Particles in Turbulence: Toward an Improved Understanding of Plankton-turbulence Interactions | Energetics and Swim Behavior of Fish Swimming in Turbulent Flows | Project of Fish Migration Route in Sanru Dam | |
| *Pallav Ranjan*, Som Dutta, Paul Fischer, Rafael Tinoco* | *Alejandro Cáceres Euse** | *Nimish Pujara*, Theresa Oehmke, Ankur Bordoloi, Evan Variano* | *Katherine Strailey*, Rafael Tinoco, Piotr Cienciala, Bruce Rhoads, Cory Suski* | *Youichi Yasuda** | |
| **Salon #2** | **#M201** | **Computational Science and Engineering in Electrochemical Energy Systems, Chair(s): Kyle Smith and Partha Mukherjee** | | | |
| **Keynote presentation:** Numerical Solution of 3D Poisson-Nernst-Planck Equations Coupled with Classical Density Functional Theory for Modeling Ion and Electron Transport in Confined Environment | | Microstructural Screening for Porous Li-ion Battery Electrodes | Discrete Element Simulations of Li-ion Battery Electrodes using Brownian and Granular Dynamics | | |
| *Guang Lin*, Bin Zheng, Maria Sushko, Da Meng* | | *Chance Norris*, Aashutosh Mistry, Scott Roberts, Partha Mukherjee* | *Ishan Srivastava*, Dan S. Bolintineanu, Jeremy B. Lechman, Scott A. Roberts* | | |
| **Salon #3** | **#M109** | **Enhancing Flow Simulations: Stabilization, Adaptivity, Model Reduction, Chair(s): Giovanni Stabile** | | | |
| **Keynote presentation:** Reduced Order Methods for PDEs: State of the Art and Perspectives with Applications in Industry, Medicine and Environmental Sciences | | Time-accurate Calculation and Bifurcation Analysis of the Incompressible Flows Using Adaptive Variational Multiscale Modeling | The Shifted Boundary Method for Embedded Domain/Interface Computations: Applications to Free-Surface and Multiphase Flows. | Reduced Order Models for Structure-Preserving Isogeometric Flow Simulations | |
| *Gianluigi Rozza*, Francesco Ballarin, Giovanni Stabile* | | *Elie Hachem*, Philippe Meliga* | *Leo Nouveau*, Oriol Colomes, Guglielmo Scovazzi, Mehdi Khalloufi* | *Trond Kvamsdal*, Eivind Fonn, Harald van Brummelen, Adil Rasheed* | |

# TS 6: TUESDAY EVENING, APRIL 2

| 04:00 PM | 04:20 PM | 04:40 PM | 05:00 PM | 05:20 PM | 05:40 PM |
|---|---|---|---|---|---|
| **Salon #4&9** | **#M307** | **Additive Manufacturing of Metals: Modeling Applications in Material and Part Qualification, Chair(s): Kyle Johnson** | | | |
| **Keynote presentation:** Optimizing Convection Coefficients in the Finite Element Laser Powder Bed Thermal Modeling<br><br>*Erik Denlinger, Pan Michaleris*, Michael Gouge, Jeff Irwin, Chao Li* | | Modeling the Effect of Grain Heterogeneity, Defects and Residual Stress on the Fatigue Performance of Additive Manufactured Part<br><br>*Cheng Yu*, Ruishan Xie, Wing Kam Liu* | Continuous Laser Scanning Path Optimization for Directed Energy Deposition (DED) Process for Residual Stress and Distortion Mitigation<br><br>*Qian Chen*, Wen Dong, Kyle Johnson, Shaun Whetten, Albert To* | A Coupled Fluid-Mechanical Approach for Additive Manufacturing Process Modeling<br><br>*Lauren Beghini*, Michael Stender, Daniel Moser, Kurtis Ford, Michael Veilleux* | An Open-Source Framework for Pre-processing Requirements of DED and SLM Additive Manufacturing Finite Element Simulations<br><br>*Matthew Priddy** |
| **Salon #5&8** | **#M101** | **Advances in Hybridizable Discontinuous Galerkin: From Analysis to Applications, Chair(s): Cuong Nguyen** | | | |
| Adjoint-based Superconvergent Galerkin Approximations of Functionals<br><br>*Bernardo Cockburn*, Zhu Wang, Shiqiang Xia* | Adjoint-Based Mesh Optimization for Hybridized Discontinuous Galerkin Methods<br><br>*Krzysztof Fidkowski** | HDG-Voigt Formulation of Incompressible Flow Problems<br><br>*Matteo Giacomini*, Ruben Sevilla, Antonio Huerta* | High-fidelity Computational Vademecums for Incompressible Flows in Parameterized Geometries<br><br>*Antonio Huerta*, Matteo Giacomini, Ruben Sevilla* | Numerical Validation and Examination of Taylor Galerkin and Discontinuous Galerkin Scheme for Conservation Laws<br><br>*Yifan Xia*, Gaofeng Wang, Yao Zheng* | |
| **Salon #6&7** | **#M104** | **Immersed Methods for CFD and FSI, Chair(s): Ming-Chen Hsu** | | | |
| **Keynote presentation:** The Shifted Boundary Method for Embedded Computational Mechanics<br><br>*Guglielmo Scovazzi*, Alex Main, Nabil Atallah, Léo Nouveau, Ting Song, Oriol Colomés, Mehdi Khalloufi* | | An Asymptotically Compatible Framework for Local-nonlocal Coupling Problems<br><br>*Yue Yu*, Huaiqian You, David Kamensky, Nathaniel Trask, Yuri Bazilevs* | The Divergence-Conforming Immersed Boundary Method: Solids of Codimension Zero and One<br><br>*Hugo Casquero*, Carles Bona-Casas, Hector Gomez, Yongjie Zhang* | A Partition of Unity Approach to Fluid Mechanics and Fluid-Structure Interaction<br><br>*Maximilian Balmus*, Andre Massing, Johan Hoffman, David Nordsletten* | |

# TS 7: WEDNESDAY MORNING, APRIL 3

**Plenary Speaker**
**Gregory Wagner**
*Multiscale Process-Structure Simulations for Additive Manufacturing in Metals*
8:00 – 9:00 am, Red Lacquer

| 09:30 AM | 09:50 AM | 10:10 AM | 10:30 AM | 10:50 AM | 11:10 AM |
|---|---|---|---|---|---|
| **Red Lacquer** | **#M406** | **Computational Hemodynamics, from Scientific Computing to Clinics: Emerging Challenges in Finite Elements (and beyond), Chair(s): Alessandro Veneziani** | | | |
| **Keynote presentation:** Numerical Simulations of Patient-Specific Stented Arteries for Bioresorbable Prostheses: from Computational Geometry Challenges to Fluid Dynamics Predictions | | Study Type B Aortic Dissection Using a Deconvolution-based Nonlinear Filter | Near Wall Flow Structures in Cerebral Aneurysms | Explicit Solution of Cardiovascular Model Ensembles with Random Field Material Properties on GPUs | Non-intrusive Inference Reduced Order Model for Fluids Using Deep Multistep Neural Network |
| *Alessandro Veneziani*, Adrien Lefieux, Sara Bridio, Francesco Migliavacca, Claudio Chiastra, Habib Samady* | | *Huijuan Xu*, Davide Baroli, Alessandro Veneziani* | *Iolanda Velho, Alberto Gambaruto, Jorge Tiago*, Adélia Sequeira* | *Xue Li*, Daniele Schiavazzi* | *Xuping Xie*, Guannan Zhang, Clayton Webster* |
| **Salon #2** | **#M205** | **Advanced CFD and FSI for Renewable Energy, Chair(s): Jinhui Yan** | | | |
| High-fidelity Numerical Modeling for Renewable Energy Applications | Uncertainty Quantification of Progressive Damage in Offshore Wind Turbine Blades | On the Turbulent Interaction between Boundary-layer Flow and Wind Turbines/Farms: Theoretical and Experimental Insights | Numerical Simulations of Particulate Flows with Energy Exchange | | |
| *Artem Korobenko*, Ahmed Bayram, Michael Ravensbergen* | *Emily Johnson*, Artem Korobenko, Ming-Chen Hsu* | *Leonardo Chamorro*, Nicolas Tobin, Yaqing Jin* | *Zhilang Zhang*, Moubin Liu* | | |

# TS 7: WEDNESDAY MORNING, APRIL 3

| 09:30 AM | 09:50 AM | 10:10 AM | 10:30 AM | 10:50 AM | 11:10 AM |
|---|---|---|---|---|---|
| **Salon #3** | **#M109** | **Enhancing Flow Simulations: Stabilization, Adaptivity, Model Reduction, Chair(s): Gianluigi Rozza** | | | |
| Application of Reduced Basis Methods to the Stabilized Space-Time FEM Solver XNS Using the RBniCS Library | Numerical Stability of a Finite Element Implementation of the Contravariant Deformation Tensor Formulation for Viscoelastic Fluids | Adaptivity and Stopping Criterion for Iterative Solvers, with Applications to Unsteady Fluid Flow Simulations | Coarse-grained Model Development for Partial Differential Equations Exhibiting Scale Separation Using the CG-MZ-VMS Framework | Divergence-free Virtual Element Method for Stokes and Navier-Stokes Problems | |
| *Fabian Key*, Francesco Ballarin, Stefanie Elgeti, Gianluigi Rozza* | *Martien Hulsen*, Mick Carrozza, Markus Hütter, Patrick Anderson* | *Gabriel Manzinali*, Elie Hachem* | *Aniruddhe Pradhan*, Karthik Duraisamy* | *Lourenco Beirao da Veiga, Franco Dassi*, Alessandro Russo, Giuseppe Vacca* | |
| **Salon #4&9** | **#M307** | **Additive Manufacturing of Metals: Modeling Applications in Material and Part Qualification, Chair(s): Lauren Beghini** | | | |
| Iterative Simulation and Proportional-Integral Control Techniques for Constant Melt Pool Volume | Modeling and Validation of the Part Distortion in Laser Powder Bed Fusion Using Graph Theory | Ushering the Digital Twin in Metal Additive Manufacturing – A Paradigm Integrating Modeling, Sensing, and Machine Learning for Defect Prediction in Metal Additive Manufacturing | | | |
| *Jeff Irwin*, Pan Michaleris, Qian Wang* | *Reza Yavari*, Paul Hooper, Kevin Cole, Prahalada Rao, Aniruddha Gaikwad* | *Prahalada Rao*, Reza Yavari, Kevin Cole, Aniruddha Gaikwad, Mohammad Montazeri, Linkan Bian* | | | |

# TS 7: WEDNESDAY MORNING, APRIL 3

| 09:30 AM | 09:50 AM | 10:10 AM | 10:30 AM | 10:50 AM | 11:10 AM |
|---|---|---|---|---|---|
| **Salon #5&8** | **#M101** | **Advances in Hybridizable Discontinuous Galerkin: From Analysis to Applications, Chair(s): TBA** | | | |
| A New Hybridizable Mixed Method for Stokes flow Using H(curl div) | Implicit Hybridized Discontinuous Galerkin Methods for Compressible Magnetohydrodynamics | Discrete Stable, Conservative, and Constant-preserving HDG Methods for Hyperbolic Equations on Non-conforming Curved Meshes | Novel Multigrid and Multilevel Solvers for High-order Hybridized Discontinuous Galerkin Methods | Embedded/Hybridized Discontinuous Galerkin Method for Incompressible Flows | Hybrid High-Order Methods for a Bi-Fluid Model on Unfitted Meshes |
| *Jay Gopalakrishnan** | *Cristian Ciuca, Pablo Fernandez, Alexandra Christophe, Cuong Nguyen, Jaime Peraire** | *Shinhoo Kang*, Tan Bui-Thanh, David Kopriva* | *Sriramkrishnan Muralikrishnan*, Tom Wildey, Tan Bui-Thanh, John Shadid* | *Rhebergen Sander, Garth Wells** | *Erik Burman, Guillaume Delay*, Alexandre Ern* |
| **Salon #6&7** | **#M104** | **Immersed Methods for CFD and FSI, Chair(s): David Kamensky** | | | |
| Multimesh Finite Element Methods for Arbitrarily Many Meshes: Applications to Fluid Flow | Derivation of Volume-Based Immersed Finite Element Method Using Virtual Work Balancing | Control of Cylinder Wake by Using Flexible Filaments | | | |
| *August Johansson*, Mats Larson, Anders Logg, Jorgen Dokken* | *Ni Zhen*, Lucy Zhang* | *Fangfang Xie*, Hongyu Zheng, Yao Zheng* | | | |

# TS 8: WEDNESDAY AFTERNOON, APRIL 3

| 12:45 PM | 01:05 PM | 01:25 PM | 01:45 PM | 02:05 PM | 02:25 PM |
|---|---|---|---|---|---|
| **Salon #2** | **#M205** | **Advanced CFD and FSI for Renewable Energy, Chair(s): Artem Korobenko** | | | |
| Coupled Heat Transfer and Water Flow in A Borehole Heat Exchanger Array<br><br>*Tugce Baser** | Free-surface Flow Modeling and Simulation of Horizontal-axis Tidal-stream Turbines<br><br>*Jinhui Yan** | | | | |
| **Salon #3** | **#M105** | **Robust, Adaptive, High-Resolution Methods for Unsteady Flows, Chair(s): David Williams** | | | |
| **Keynote presentation:** Efficient High-Order Discontinuous Galerkin Solution Strategies for Implicit Unsteady Flow Simulations<br><br>*Matteo Franciolini*, Krzysztof Fidkowski, Andrea Crivellini* | | Entropy Stable Schemes Based on Modal Discontinuous Galerkin Formulations<br><br>*Jesse Chan** | On the Effect of Temporal Error in High-Order Simulations of Unsteady Flows<br><br>*Kevin Holst, Ryan Glasby, Ryan Bond, Douglas Stefanski** | | |
| **Salon #4&9** | **#M306** | **Additive Manufacturing and Digital Rock Physics for Granular and Fractured Materials, Chair(s): TBA** | | | |
| Numerical and Experimental Validation of Fracture Characterization and Flow Testing in 3D Printed Single Fracture Network<br><br>*Hongkyu Yoon*, Mario Martinez, John Bower, Alec Kucala* | Unconfined Compressive Strength of Additive Manufactured Layered Rocks with Oriented Texture<br><br>*Liyang Jiang*, Hongkyu Yoon, Antonio Bobet, Laura J. Pyrak-Nolte* | Coupling Poroelasticity and Phase Field Approach for Fracture Propagation<br><br>*Sanghyun Lee*, Mary Wheeler, Thomas Wick, Andro Mikelic* | A Meta-modeling Game for Creating Elasto-plasticity Models<br><br>*WaiChing Sun, Kun Wang** | A Constitutive Model for Large Deformation Soil Problems<br><br>*Craig Foster*, Milad Parvaneh, Sheng-Wei Chi, Ashkan Mahdavi, Mohammad Atif* | |

# TS 8: WEDNESDAY AFTERNOON, APRIL 3

| 12:45 PM | 01:05 PM | 01:25 PM | 01:45 PM | 02:05 PM | 02:25 PM |
|---|---|---|---|---|---|
| **Salon #5&8** | **#M102** | **Domain Decomposition Methods for Fluids, Chair(s): Marco Discacciati** | | | |
| Reduced Order Coupling of Non-conforming Discretizations of PDEs<br><br>*Simone Deparis, Luca Pegolotti** | Explicit Synchronous Partitioned Algorithms for Interface Problems Based on Lagrange Multipliers<br><br>*Kara Peterson, Paul Kuberry*, Pavel Bochev* | Block FETI-DP Preconditioners for Isogeometric Discretizations of Three-dimensional Stokes Equations<br><br>*Simone Scacchi*, Luca F. Pavarino, Olof B. Widlund, Stefano Zampini* | Hybrid Nodal Integral - Finite Element Method (NI-FEM) for 3D, Time-Dependent Convection Diffusion Equation<br><br>*Sundar Namala*, Rizwan Uddin* | | |
| **Salon #6&7** | **#M111** | **Hypercomplex Disaster Simulations, Chair(s): Mitsuteru Asai** | | | |
| **Keynote presentation:** Development of VR-based Disaster Experience System Using Pseudo Fluid-structure Coupling Analysis<br><br>*Masaaki Sakuraba*, Kazuya Nojima* | | Research of Colliding Force Acting to the Building by Multiple Tsunami Drifting Objects<br><br>*Kazuya Nojima*, Masaaki Sakuraba, Shinsuke Takase* | FSI Analysis Considering Tsunami Debris Impact Loading Based on Finite Cover Method<br><br>*Shinsuke Takase*, Ryosuke Ogasawara, Kenji Kaneko, Seizo Tanaka, Kazuya Nojima, Masaaki Sakuraba* | Wind and Tide Effects on the Choctawhatchee Bay Plume at Destin Inlet, Florida<br><br>*Rosemary Cyriac, Joel Casey Dietrich*, Cheryl Ann Blain, Clint Dawson, Kendra Dresback, Arash Fathi, Matthew Bilskie, Hans Graber, Scott Hagen, Randall Kolar* | Using a Multi-Resolution Approach to Improve the Accuracy and Efficiency of Flooding Predictions<br><br>*Ajimon Thomas*, Taylor Asher, Brian Blanton, Clint Dawson, Casey Dietrich, Jason Fleming, Mark Loveland, Rick Luettich* |

# TS 9: WEDNESDAY AFTERNOON, APRIL 3

| 03:00 PM | 03:20 PM | 03:40 PM | 04:00 PM | 04:20 PM | 04:40 PM |
|---|---|---|---|---|---|
| **Salon #3** | **#M105** | **Robust, Adaptive, High-Resolution Methods for Unsteady Flows, Chair(s): TBA** | | | |
| Adaptive Anisotropic Unstructured Space-Time Reservoir Flow Simulations<br><br>*Marshall Galbraith*, Savithru Jayasinghe, Philip Caplan* | A Finite Element ALE Method for Multi-Material Flows<br><br>*Jacob Waltz*, Aditya Pandare, Jozsef Bakosi* | A Robust Characteristic-based Boundary Condition for High-order Solution of Three-dimensional MHD Equations Using the Flux Reconstruction Method<br><br>*Xiaoliang Zhang, Chunlei Liang** | | | |
| **Salon #4&9** | **#M301** | **Advanced Simulation Technologies in Additive Manufacturing, Chair(s): Bernhard Peters** | | | |
| DEM-CFD predictions for Laser Powder Bed Fusion (LPBF)<br><br>*Alvaro Estupinan Donoso, Bernhard Peters** | Thermal Modeling in Metal Additive Manufacturing Using Graph Theory<br><br>*Reza Yavari*, Kevin D. Cole, Prahalada Rao* | Thermal Modeling in Metal Additive Manufacturing Using Graph Theory: Experimental Validation with Directed Energy Deposition<br><br>*Reza Yavari, Jordan Severson*, Aniruddha Gaikwad, Kevin D. Cole* | Controlling of Liquid-layer Deposition Process in Ceramic Additive Manufacturing<br><br>*Andrei Kozhevnikov*, Rudie Kunnen, Gregor van Baars, Herman Clercx* | | |
| **Salon #5&8** | **#M102** | **Domain Decomposition Methods for Fluids, Chair(s): Marco Discacciati** | | | |
| Non-iterative Multi-physics Domain Decomposition Method for Coupled Free Flow and Porous Media Flow Problem<br><br>*Yanzhao Cao, Max Gunzburger, Xiaoming He*, Buyang Li, Changxin Qiu, Xiaoming Wang* | Optimized Transmission Conditions for the Stokes-Darcy Coupling<br><br>*Martin Jakob Gander, Tommaso Vanzan** | Domain Decomposition Methods for the Stokes-Darcy Problem<br><br>*Marco Discacciati** | | | |

# TS 9: WEDNESDAY AFTERNOON, APRIL 3

| 03:00 PM | 03:20 PM | 03:40 PM | 04:00 PM | 04:20 PM | 04:40 PM |
|---|---|---|---|---|---|
| **Salon #6&7** | **#M111** | **Hypercomplex Disaster Simulations, Chair(s): Shinsuke Takase** | | | |
| Implicit Material Point Method for Rainfall-induced Slope Disasters<br><br>*Yuya Yamaguchi, Kenjiro Terada*, Shinsuke Takase, Shuji Moriguchi* | Fluid-rigid Body Interaction Simulation Based on a Stabilized ISPH Method Incorporated with an Energy Tracking Impulse Method<br><br>*Mitsuteru Asai*, Li Yi* | Large-Scale Parallel Solver of Explicit MPS Method with Polygon Boundary Representation<br><br>*Naoto Mitsume*, Tomonori Yamada, Shinobu Yoshimura* | DG Method for Tsunami Analysis Based on Interface Capturing Method<br><br>*Seizo Tanaka** | | |