# Oral presentations on Thursday, September 21st, 2017

**Plenary Session**

| Time | POB 2.302 |
|---|---|
| Thurs. 12:10pm | *Volumetric Spline Parameterization for Isogeometric Analysis with Engineering Applications*<br><br>Jessica Zhang |
| Thurs. 1:00pm | *Large-Scale Bayesian Inversion and the flow of the Antarctic Ice Sheet*<br><br>Omar Ghattas |

**Session 1**

| Time | POB 2.402<br><br>Optimization and UQ A<br>*Chairs: Tim Smith & Tom O'Leary-Roseberry* | POB 6.304<br><br>Numerical Methods & PDEs A<br>*Chair: Brendan Keith* |
|---|---|---|
| Thurs. 2:05pm | *hIPPYlib: An Extensible Software Framework for Large-Scale Deterministic and Linearized Bayesian Inverse Problems*<br><br>Villa, Umberto | |
| Thurs. 2:10pm | | *High-order Relaxed Multirate Infinitesimal Step Methods for Multiphysics Applications*<br><br>Sexton, Jean M. |
| Thurs. 2:30pm | *Identification of Minimum Power Dominating Sets in Re-Configurable Graph Networks*<br><br>Smith, Logan | *IMEX HDG-DG: A coupled implicit hybridized discontinuous Galerkin and explicit discontinuous Galerkin approach for Euler systems*<br><br>Kang, Shinhoo |
| Thurs. 2:50pm | *Hessian-based sampling for goal-oriented model reduction with high-dimensional parameters*<br><br>Chen, Peng | *Higgs Boson Equation in the de Sitter Spacetime: Computational Results*<br><br>Balogh, Andras |
| Thurs. 3:10pm | *Reconstruction of a Compactly Supported Contrast function In The Presence of a Background Random Medium*<br><br>Borges, Carlos | *A generalized wavelet based grid-adaptive and scale-selective implementation of WENO schemes for conservation laws*<br><br>Maulik, Romit |

**Session 2**

| Time | POB 2.402<br><br>Optimization and UQ B<br>*Chairs: Tim Smith & Tom O'Leary-Roseberry* | POB 6.304<br><br>Numerical Methods & PDEs B<br>*Chair: Brendan Keith* |
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| Thurs. 3:40pm | *Multiscale Optimization Using Generalized Mortar Methods*<br><br>Seidl, Tom | *The DPG Method for High Frequency Time-harmonic Wave Propagation Problems*<br><br>Petrides, Socratis |
| Thurs. 4:00pm | *A PDE Constrained Optimization Approach to the Solution of the Stefan Problem*<br><br>O'Leary Roseberry, Tom | *A DPG Approach to the Full Vectorial Transverse Mode Instability Model of Optical Laser Amplifiers*<br><br>Nagaraj, Sriram |
| Thurs. 4:20pm | *Multiscale methods for filtering turbulent systems*<br><br>Lee, Yoonsang | *Construction of h-refined finite element spaces with applications to multigrid algorithms*<br><br>Capodaglio, Giacomo |
| Thurs. 4:40pm | | *Fast algorithm in radiative transfer*<br><br>Zhong, Yimin |

# Poster presentations on Thursday, September 21st, 2017    (5:30pm POB 6.102)

Amanbek, Yerlan   -   *Adaptive Numerical Homogenization for Upscaling Single Phase Flow and Transport*

Bhuiyan, Md Al Masum   -   *Dynamic Fourier process applied to the study of geophysical time series*

Dobrovolny, Hana   -   *Using mathematical models to estimate the ratio of infectious to non-infectious viral production of RSV*

Feng, Xinzeng   -   *Measuring the mechanical forces during cancer cell invasion using inverse-method traction microscopy*

Frank, Florian   -   *FESTUNG: Finite Element Simulation Toolbox for UNstructured Grids*

Gudoshnikov, Ivan   -   *Modelling and stabilization of quasistatic evolution of elastoplastic systems subject to periodic loading*

Guan, Li   -   *Impact of model-form-uncertainty of the simple susceptible-infectious-recovery epidemic models*

Henscheid, Nick   -   *Uncertainty Quantification for a Predictive Model of Chemotherapy Efficacy*

Islam, Md Rafiul   -   *Dynamics of the Emerging Fungal Pathogen Batrachochytrium salamandrivorans on the Eastern Newt*

Jarrett, Angela   -   *Improving the predictive ability of a mechanically coupled spatiotemporal model of breast cancer using patient specific MRI data*

Kazhyken, Kazbek   -   *dgswemv2: a modern c++ discontinuous Galerkin finite element solver*

Kim, Changho   -   *Stochastic Simulation Method for Reactive Microfluids under Thermal Fluctuations*

Le, Ellen   -   *Model Reduction via Domain Decomposition-based Methods for Large-Scale Inverse Problems*

Mankad, Het   -   *Perturbation Theory Applied to a Multiscale Mixed Method: A Parallel Algorithm*

Marvin, Brad   -   *A Bayesian Approach to Model Inadequacy*

Oyekole, Oyekola   -   *A second-order partitioned scheme for fluid-structure interaction problems*

Paranamana, Pushpi J.   -   *Hypersurface model of the fracture for nonlinear fluid flows*

Pinky, Lubna Jahan Rashid   -   *Modeling of Viral Coinfection in Human Respiratory Tract Using Stochastic Method*

Smith, Tim   -   *Dynamical Reconstruction of AMOC Variability at 34˚S*

Smith, Logan   -   *Identification of Minimum Power Dominating Sets in Re-Configurable Graph Networks*

Zhao, Xikai   -   *Accuracy of Adaptive Order WENO Schemes for Solving Conservation Laws*

# Oral presentations on Friday, September 22st, 2017

**Plenary Session**

| Time | POB 2.302 |
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| Thurs. 8:30am | *Multi-Resolution Geometric Modeling of the Mitral Heart Valve Leaflets*<br><br>Micheal Sacks |

**Session 3**

| Time | POB 2.302<br><br>Numerical Methods & PDEs C<br>*Chair: Federico Fuentes* | POB 2.402<br><br>CS & Data Science<br>*Chair: Max Bremer* | POB 6.304<br><br>Biology A<br>*Chair: Josh Chen* |
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| Fri. 9:30am | *Discretely entropy stable discontinuous Galerkin methods*<br><br>Chan, Jesse | *Performance Comparison of HPX vs. MPI+X Threading Models for Discontinuous Galerkin Finite Element Methods*<br><br>Bremer, Max | *An in Silico Heart Model of Pulmonary Arterial Hypertension*<br><br>Avaz, Reza |
| Fri. 9:50am | *Fractional-Parabolic Deformations With Sinh-Acceleration*<br><br>Levendorskii, Sergei | *An Extended DEIM Algorithm for Subset Selection*<br><br>Hendryx, Emily | *Uncertainty Quantification for a Predictive Model of Chemotherapy Efficacy*<br><br>Henscheid, Nick |
| Fri. 10:10am | *High-order polygonal discontinuous Petrov-Galerkin (PolyDPG) methods using ultraweak formulations*<br><br>Jaime Mora Paz | *Block-wise Implementation of the Kalman Filter Based Iterative Learning Control for MIMO Systems*<br><br>Jayawardhana, Rangana | *Fluid-structure interaction modeling of bioprosthetic heart valves*<br><br>Zakerzadeh, Rana |
| Fri. 10:30am | *Inexact hierarchical scale separation: A two-scale approach for linear systems from discontinuous Galerkin discretizations*<br><br>Frank, Florian | | *Simulating Bacterial Motility in Confined Environments*<br><br>LaGrone, John |

**Plenary Session**

| Time | POB 2.302 |
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| Thurs. 11:00am | *Learning From Aggregated Data*<br><br>Joydeep Gosh |
| Thurs. 1:10pm | *A New Hybrid RANS/LES Modeling Approach for Complex Turbulent Flows*<br><br>Robert Moser |

**Session 4**

| Time | POB 2.302<br><br>Fluid Mechanics<br>*Chairs: Gopal Yalla & Prakash Mohan* | POB 6.304<br><br>Geological and Structural Mechanics<br>*Chairs: Tim Smith & Tom O'Leary-Roseberry* |
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| Fri. 2:10pm | *Scaling of Lyapunov Exponents in Homogeneous Isotropic Turbulence*<br><br>Mohan, Prakash | *Numerical Simulation of Carbonate Matrix Acidization Using Adaptive Enriched Galerkin Method with Entropy Residual Stabilization*<br><br>Dong, Rencheng |
| Fri. 2:30pm | *Stochastic Simulation Method for Reactive Microfluids under Thermal Fluctuations*<br><br>Kim, Changho | *Hypersurface model of the fracture for nonlinear fluid flows*<br><br>Paranamana, Pushpi |
| Fri. 2:50pm | *Effective Boundary Conditions for Viscous Incompressible Flow Over Rough Boundaries*<br><br>Carney, Sean | *Adaptive multiscale modeling of the flow and reactive transport using Numerical Homogenization and Enhanced Velocity Mixed FEM in porous media*<br><br>Amanbek, Yerlan |
| Fri. 3:10pm | *A DG method for the coupled Navier-Stokes and Cahn-Hilliard equations*<br><br>Liu, Chen | *Modelling and stabilization of quasistatic evolution of elastoplastic systems subject to periodic loading*<br><br>Gudoshnikov, Ivan |
| Fri. 3:30pm | *Global stability of 2D plane Couette flow beyond the energy stability limit*<br><br>Fuentes, Federico | |

**Plenary Session**

| Time | POB 2.302 |
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| Thurs. 4:00pm | *Isogeometric Analysis of Solids, Structures, and Fluid-Structure Interaction: From Early Results to Recent Developments*<br><br>Yuri Bazilevs |

# Oral presentations on Saturday, September 23rd, 2017

**Plenary Session**

| Time | POB 2.302 |
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| Thurs. 9:00am | *Personalized Blood Flow Simulations from an Image-Derived Model: Changing the Pradigm for Cardiovascular Diagnostics*<br><br>Leo Grady |

**Session 5**

| Time | POB 2.302<br><br>Biology B<br>*Chair: TBD* | POB 6.402<br><br>Numerical Methods & PDEs D<br>*Chairs: Tom O'Leary-Roseberry & Brendan Keith* |
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| Sat. 10:10am | *Magnetic drug targeting: a comparison between CFD and FSI simulations*<br><br>Calandrini, Sara | *The Double Membrane Problem*<br><br>Duque, Luis |
| Sat. 10:30am | *A biophysical model for tumor induced angiogenesis calibrated and validated with a murine model of glioma*<br><br>Hormuth, David | *Isogeometric shape optimization on triangulations*<br><br>Wang, Cunfu |
| Sat. 10:50am | *Cooperative Learning with Iterative Learning Control*<br><br>Jayawardhana, Rangana | *Multilevel and Multigrid solvers for hybridized discontinuous Galerkin (HDG) methods*<br><br>Muralikrishnan, Sriramkrishnan |
| Sat. 11:10am | *Two Possible Mechanisms of Chronic Viral Coinfections : Cellular* | *A New Discontinuous Galerkin Method for the Wave Equation With Background* |

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| | *Regeneration and Superinfection*<br><br>Pinky, Lubna Jahan Rashid | *Flow*<br><br>Zhang, Lu |
| Sat. 11:30am | *Respiratory Control System Model During Exercise With Two Delays*<br><br>Pradhan, Saroj P. | *New families of H(div) mixed finite elements on cuboidal hexahedra*<br><br>Tao, Zhen |
| Sat. 11:50am | *Numerical simulation of deformability-based red blood cell separation in a microfluidic device*<br><br>Kabacaoglu, Gokberk | *Goal-oriented adaptive mesh refinement with discontinuous Petrov–Galerkin methods*<br><br>Keith, Brendan |