HKUST IAS-HKWM-EASIAM Joint Workshop on Recent Advances on Scientific Computing, Random Matrices and Data Science

December 18-20, 2024

Venue: IAS4042, 4/F, Lo Ka Chung Building, Lee Shau Kee Campus, HKUST

December 18, 2024 (Wed)

Time	Event
08:20 - 08:50	**Registration**
08:50 - 09:00	**Opening Remarks**
Session: Numerical Analysis and Scientific Computing **Session Chair: Yang XIANG (The Hong Kong University of Science and Technology)**	
09:00 - 09:50	**D1-#1: A Unified Discretization Framework for Differential Equation Approach with Lyapunov Arguments for Convex Optimization** *Takayasu MATSUO (The University of Tokyo)*
09:50 - 10:40	**D1-#2: Well-balanced Discontinuous Galerkin Method for Hyperbolic Conservation Laws** *Yan XU (University of Science and Technology of China)*
10:40 - 11:10	*Group photo taking & Coffee Break (Venue: 4/F open area)*
11:10 - 12:00	**D1-#3: An Energy-stable Mixed Finite Element Method for Rosensweig Ferrofluid Flow Model** *Xiaoping XIE (Sichuan University)*
12:00 - 14:00	*Lunch (Self-arranged)*
Session Chair: Luchan ZHANG (Shenzhen University)	
14:00 - 14:50	**D1-#4: An Introduction to a C++ Library AFEPack and Its Applications** *Guanghui HU (University of Macau)*
14:50 - 15:40	**D1-#5: Spherical Essentially Non-Oscillatory (SENO) Interpolations and SLERP-TVDRK (STVDRK) Integrators** *Shing-Yu LEUNG (The Hong Kong University of Science and Technology)*
15:40 - 16:10	*Coffee Break (Venue: 4/F open area)*
Session Chair: Guanghui HU (University of Macau)	
16:10 - 17:00	**D1-#6: Continuum Models for Structures and Dynamics of Interfaces in Crystalline Materials** *Luchan ZHANG (Shenzhen University)*
17:00 - 17:50	**D1-#7: Optimal Convergence of the Arbitrary Lagrangian–Eulerian Interface Tracking Method for Two-phase Navier–Stokes Flow** *Shu MA (National University of Singapore)*

December 19, 2024 (Thu)

Time	Event
Session: Numerical Analysis and Scientific Computing **Session Chair: Lina ZHAO (City University of Hong Kong)**	
09:00 – 09:50	**D2-#1: Some New Staggered Discontinuous Galerkin Methods on General Polygonal Meshes** *Eun-Jae PARK (Yonsei University)*
09:50 – 10:40	**D2-#2: The Fully Mixed Finite Element Method for Contact Problems with Signorini and Tresca-Friction Conditions** *Guanyu ZHOU (University of Electronic Science and Technology of China)*
10:40 – 11:10	*Coffee Break (Venue: 4/F open area)*
11:10 – 12:00	**D2-#3: Modeling, Stability Analysis and Numerical Computation for Complex Fluid Problems Arising from Industrial Applications** *Dongdong HE (The Chinese University of Hong Kong, Shenzhen)*
12:00 – 14:00	*Lunch (Self-arranged)*
Session Chair: Eun-Jae PARK (Yonsei University)	
14:00 – 14:50	**D2-#4: Structure-preserving Schemes for the Landau-Lifshitz Equation and Applications** *Xiaoli LI (Shandong University)*
14:50 – 15:40	**D2-#5: Symmetric H(divdiv) Conforming Finite Elements and Their Applications** *Rui MA (Beijing Institute of Technology)*
15:40 – 16:10	*Coffee Break (Venue: 4/F open area)*
16:10 – 17:00	**D2-#6: Rigorous Computation for Eigenvalue Problems and Solution Verification for the Navier-Stokes Equations** *Xuefeng LIU (Tokyo Woman's Christian University)*
17:00 – 17:50	**D2-#7: Schrödingerization Based Computationally Stable Algorithms for Ill-Posed Problems in Partial Differential Equations** *Chuwen MA (Shanghai Jiao Tong University)*
18:10 – 20:30	*Banquet (By Invitation Only; Venue: Sai Kung)* **Coach departs from Lo Ka Chung Building at 18:10 and returns at 20:30*

December 20, 2024 (Fri)

Time	Event
Session: Random Matrix Theory and Related Topics **Session Chair: Ke WANG (The Hong Kong University of Science and Technology)**	
09:00 - 09:50	**D3-#1: Spectral Clustering in the Gaussian Mixture Block Model** *Shuangping LI (Stanford University)*
09:50 - 10:40	**D3-#2: Operation with Concentration Inequalities in High Dimension** *Cosme LOUART (The Chinese University of Hong Kong, Shenzhen)*
10:40 - 11:10	*Coffee Break (Venue: 4/F open area)*
11:10 - 12:00	**D3-#3: Robust Estimation of Number of Factors in High Dimensional Factor Modeling via Spearman's Rank Correlation Matrix** *Zeng LI (Southern University of Science and Technology)*
12:00 - 14:00	*Lunch (Self-arranged)*
Session Chair: Yukun HE (City University of Hong Kong)	
14:00 - 14:50	**D3-#4: Free Cumulants and Freeness for Unitarily Invariant Random Tensors** *Luca LIONNI (CNRS - École Normale Supérieure de Lyon)*
14:50 - 15:40	**D3-#5: Extremal Eeigenvalues of Large Non-Hermitian Random Matrices** *Yuanyuan XU (Academy of Mathematics and Systems Science, Chinese Academy of Sciences)*
15:40 - 16:10	*Coffee Break (Venue: 4/F open area)*
16:10 - 17:00	**D3-#6: A Framework for Statistical Inference via Randomized Algorithms** *Zhixiang ZHANG (University of Macau)*