IMS Young Mathematical Scientists Forum — Applied Mathematics

(06–09 January 2025)

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Venue

Department of Mathematics
Seminar Room 1
Block S17, #04-06
10 Lower Kent Ridge Road
Singapore 119076

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For more information: https://ims.nus.edu.sg/events/ims_forummath2025_am

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Monday, 06 Jan 2025		
Time	**Title**	**Speaker**
0900–0910	Registration	
0910–0915	Opening Remarks	Program Organizer
0915–1000	Tree Tensor Network Operators for Long-Range Pairwise Interactions	Gianluca Ceruti *University of Innsbruck, Austria*
1000–1045	On the Kinetic Description of Objective Molecular Dynamics (OMD): Multiscale Modeling, Numerics, Data-driven Applications	Kunlun Qi *University of Minnesota-Twin Cities, USA*
1045–1100	Group Photo & Tea Break	
1100–1145	Mathematical Aspects of Deep-learning Techniques for Identifying Collective Variables of Molecular Dynamics	Wei Zhang *Zuse Institute Berlin, Germany*
1145–1330	***Lunch Reception*** Department of Mathematics (Lounge)	
1330–1415	Any-dimensional Optimization	Eitan Levin *California Institute of Technology, USA*
1415–1500	Real-Time Solution of Mixed-Integer Quadratic Programs Using Decision Diagrams	Shaoning Han *National University of Singapore, Singapore*
1500–1515	Tea Break	
1515–1600	Near-Optimal Regret Guarantee of CE Heuristic for Online Linear Programming	Wenjia Wang *Hong Kong University of Science and Technology (Guangzhou), China*
1600–1645	Exploring Chordal Sparsity in Semidefinite Programming with Sparse Plus Low-rank Data Matrices	Tianyun Tang *National University of Singapore, Singapore*

Tuesday, 07 Jan 2025		
Time	**Title**	**Speaker**
0900–0915	Registration	
0915–1000	Efficient and Distribution-aware Model and Data Pruning	Qi Lei *NYU Courant Institute of Mathematical Sciences, USA*

Tuesday, 07 Jan 2025		
Time	**Title**	**Speaker**
1000–1045	Understanding Distribution Learning of Diffusion Models via Low-Dimensional Modeling	Peng Wang *University of Michigan, USA*
1045–1100	Tea Break	
1100–1145	Universal Parameter-free Methods for Convex and Nonconvex Optimization	Tianjiao Li *Georgia Institute of Technology, USA*
1145–1330	Lunch Break	
1330–1415	Optimization and Learning for Mean-Field Games via Occupation Measure	Anran Hu *Columbia University, USA*
1415–1500	Provable Benefit of Cutout and CutMix for Feature Learning	Chulhee Yun *KAIST, S.Korea*
1500–1515	Tea Break	
1515–1600	Propagation of Chaos for Mean-field Neural Networks and its Application to Model Merging	Atsushi Nitanda *A*Star, Singapore*
1600–1645	Towards Large Scientific Learning Models with In-Context Operator Networks	Liu Yang *National University of Singapore, Singapore*
1745–2000	*Conference Dinner at The Scholar* 1-way transfer from NUS S17 - NUS Guildhouse Speakers and Invited Guests Only	

Wednesday, 08 Jan 2025		
Time	**Title**	**Speaker**
0900–0915	Registration	
0915–1000	Generative Diffusion Models: Optimization, Generalization and Fine-tuning	Renyuan Xu *New York University, USA*
1000–1045	Hedging: Holding Stocks, Trading Bonds	Marko Hans Weber *National University of Singapore, Singapore*
1045–1100	Tea Break	
1100–1145	Stochastic Stefan Problems in Finance: From Contagion to Supercooling	Andreas Søjmark *London School of Economics and Political Science, UK*
1145–1330	Lunch Break	
1330–1415	Calibration to Market-implied Risk Measures	Gabriele Visentin *ETH Zürich, Switzerland*

Wednesday, 08 Jan 2025		
Time	**Title**	**Speaker**
1415–1500	Channel Simulation and Lossy Compression	Cheuk Ting Li *The Chinese University of Hong Kong, Hong Kong SAR of China*
1500–1515	Tea Break	
1515–1600	Solving Sparse \& High-Dimensional-Output Regression via Compression	Guanyi Wang *National University of Singapore, Singapore*

Thursday, 09 Jan 2025		
Time	**Title**	**Speaker**
	Free Discussion	