

IMS-NTU joint workshop on
Applied Geometry for Data Sciences Part II
(02 Jun 2025–06 Jun 2025)

Name and Affiliation	Talk Title
Frédéric Barbaresco Thales Group, France	Symplectic Foliation-informed Neural Network (SFINN) and Lie Groups Machine Learning based on Jean-marie Souriau Lie Groups Thermodynamics & Koszul Information Geometry
Tolga Birdal Imperial College London, UK	Topological Complexity Measures as Proxies for Generalization in Neural Networks
Cristian Bodnar Silurian AI, UK	Aurora: A Foundation Model for the Earth System
Baris Coskunuzer University of Texas Dallas, USA	Topological Compound Fingerprinting in Computer Aided Drug Discovery
Xiaowen Dong University of Oxford, UK	<i>ZOOM Talk</i> Bayesian Optimisation of Graph-based Functions
Mustafa Hajj University of San Francisco, USA	Frontiers and Opportunities in Topological Deep Learning
Niu Huang National Institute of Biological Sciences, China	Integrating HPC and AI: A New Paradigm for Predicting Protein-ligand Binding
Wei Huang RIKEN, Japan	Decoding Deep Graph Neural Networks: An Optimization and Generalization Perspective
Stephan Huckemann Georg-August-Universität Göttingen, Germany	Dirty Limit Theorems and Applications
Stephan Klaus Mathematisches Forschungsinstitut Oberwolfach, Germany	Nonlinear Regression with Real Algebraic Varieties and their Topology
Patrice Koehl University of California, Davis, USA	A Physicist's View on Partial 3D Shape Comparison
Ran Levi The University of Aberdeen, UK	Foundations of Differential Calculus for Modules over Small Categories
Zheng Ma Shanghai Jiao Tong University, China	Solving PDE Inverse Problems with Generative Models and Their Applications

Name and Affiliation	Talk Title
Anthea Monod Imperial College London, UK	<i>ZOOM Talk</i> Algebraic Geometry Learns Machines and Machines Learn Algebraic Geometry
Frank Nielsen Sony Computer Science Laboratories, Japan	Computational Information Geometry on Bregman Manifolds and Submanifolds
Hans Riess Georgia Institute of Technology, USA	Categories and Sheaves for Optimization: From Multi-Stage to Distributed
Roman Sauer Karlsruhe Institute for Technology, Germany	Expanders, Waists, and the Kazhdan Property
Jian Tang HEC Montréal, Canada	Geometric Deep Learning for Protein Design
Ben Yang University of Oxford, UK	Large Isometry Invariant Topological Transform Shape Descriptor
Yaoyu Zhang Shanghai Jiao Tong University, China	Towards Understanding the Condensation Phenomenon of Deep Neural Networks
Yipeng Zhang Nanyang Technological University, Singapore	Multi-Cover: A Mathematical Framework for Topological Data Analysis and Deep Learning
Difan Zou University of Hong Kong, Hong Kong SAR	Towards Understanding the Representation Learning of Diffusion Models