

Applied Topology in Frontier Sciences (11–22 July 2022)

Conference on Applied, Combinatorial and Toric Topology



*[Registration](#) is required for this program.

Venue

Virtual: The details and link will be sent to you before the program commences after registration has been processed.



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Conference on Applied, Combinatorial and Toric Topology (18-22 July 2022)

All times are indicated in **GMT+8**.

For time zones conversion: [Click Here](#)

Monday, 18 July 2022		
Time	Title	Speaker
1950–2000	Opening remarks	
2000	Session Chair: Claudia Landi (Università degli Studi di Modena e Reggio Emilia) & Patrizio Frosini (Università di Bologna)	
2000–2050	Computing the matching distance of 2-parameter persistence modules from critical values	Claudia Landi Università degli Studi di Modena e Reggio Emilia, Italy
2050–2140	On the use of group equivariant non-expansive operators for topological data analysis and geometric deep learning	Patrizio Frosini Università di Bologna, Italy
2140–2200	<i>Break</i>	
2200–2250	New Results in Computing Zigzag and Multiparameter Persistence	Tamal K. Dey Purdue University, USA
2250–2340	Evolutionary de Rham-Hodge method	Jiahui Chen Michigan State University
Tuesday, 19 July 2022		
Time	Title	Speaker
2000	Session Chair: Ran Levi (University of Aberdeen)	
2000–2050	Geometric Data Science challenges and solutions	Vitaliy Kurlin University of Liverpool, UK
2050–2140	Persistence module calculus	Ran Levi University of Aberdeen, UK
2140–2200	<i>Break</i>	
2200–2250	Hypergraph Visualization: Topological Simplification and Comparisons	Bei Wang University of Utah, USA

Wednesday, 20 July 2022		
Time	Title	Speaker
0800	Session Chair: Yasuaki Hiraoka (Kyoto University)	
0800–0850	Topology-Driven Learning for Biomedical Image Analysis	Chao Chen Stony Brook University, USA
0850–0940	Girth, magnitude homology, and phase transition of diagonality	Yasuaki Hiraoka Kyoto University, Japan
0940–1000	<i>Break</i>	
1000–1050	The persistent topology of optimal transport based thickenings	Henry Adams Colorado State University, USA
1050–1140	Mathematical AI for Molecular Sciences	Junjie Wee Nanyang Technological University, Singapore
1140–2000	<i>Session will resume at 8 pm.</i>	
2000	Session Chair: Wojciech Chacholski (Royal Institute of Technology)	
2000–2050	Homological algebra and persistence	Wojciech Chacholski Royal Institute of Technology, Sweden
2050–2140	Lattice-Valued Network Sheaves	Hans Riess University of Pennsylvania, USA
2140–2200	<i>Break</i>	
2200–2250	Induced Maps and Dimension Reduction	Bradley J. Nelson The University of Chicago, USA
2250–2340	Graphs, hypergraphs and network analysis	Jürgen Jost Max Planck Institute, Germany
Thursday, 21 July 2022		
Time	Title	Speaker
1400	Session Chair: Vanessa Robins (Australian National University)	
1400–1450	Stability of persistence diagrams derived from digital images	Vanessa Robins Australian National University, Australia
1450–1540	Of mice and men	Kathryn Hess Bellwald EPFL, Switzerland
1540–1600	<i>Break</i>	
1600–1650	Vietoris-Rips transformations in multipersistent homology and an application to viral evolution	Andreas Ott Karlsruhe Institute of Technology, Germany
1650–2000	<i>Session will resume at 8 pm.</i>	

Thursday, 21 July 2022		
Time	Title	Speaker
2000	Session Chair: Konstantin Mischaikow (Rutgers, The State University of New Jersey)	
2000–2050	Persistent Laplacian and its applications in SARS-CoV-2	Rui Wang Michigan State University, USA
2050–2140	Identifying Nonlinear Dynamics with High Confidence from Sparse Data	Konstantin Mischaikow Rutgers, The State University of New Jersey, USA
2140–2200	<i>Break</i>	
2200–2250	Graph rules and topological insights for inhibitory network dynamics	Carina Curto The Pennsylvania State University, USA

Friday, 22 July 2022		
Time	Title	Speaker
2000	Session Chair: Marian Mrozek (Jagiellonian University)	
2000–2050	Some recent advances in combinatorial topological dynamics	Marian Mrozek Jagiellonian University, Poland
2050–2140	Understanding Random Persistence Diagrams	Primoz Skraba Queen Mary University of London, UK
2140–2200	<i>Break</i>	
2200–2250	Morse Theoretic Signal Compression and Reconstruction on Chain Complexes	Kelly Spry Maggs EPFL, Switzerland
2250–2340	Digraph persistence	Massimo Ferri Università di Bologna, Italy