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

Playlist for Conference on Topology-based Learning, Biomolecular Topology and Related Topics

Playlist for Conference on Applied, Combinatorial and Toric Topology

Name & Affiliation	Talk Title
Henry Adams Colorado State University, USA	The persistent topology of optimal transport based thickenings
Javier Arsuaga University of California Davis, USA	DNA knotting in liquid crystalline phases
Kathryn Hess Bellwald EPFL, Switzerland	Of mice and men
Igor Berezovsky A*STAR, Singapore	Protein allostery: from molecular bases to practical implications
Ginestra Bianconi Queen Mary University of London, UK	The dynamics of higher-order networks: the effect of topology and triadic interactions
Jason Cantarella University of Georgia, USA	Topological polymers and random embeddings of graphs
Wojtek Chacholski KTH Royal Institute of Technology, Sweden	Homological algebra and persistence
Chao Chen Stony Brook University, USA	Topology-driven learning for biomedical image analysis
Jiahui Chen Michigan State University, USA	Evolutionary de Rham-Hodge method
Carina Curto The Pennsylvania State University, USA	Graph rules and topological insights for inhibitory network dynamics
Yuri Dabaghian The University of Texas Health Science Center at Houston (UTHealth), USA	Spatial representability of neuronal activity
Isabel Darcy University of Iowa, USA	Modeling knotted proteins with tangles

Name & Affiliation	Talk Title
Tamal K. Dey Purdue University, USA	New results in computing zigzag and multiparameter persistence
Massimo Ferri Università di Bologna, Italy	Digraph persistence
Patrizio Frosini Università di Bologna, Italy	On the use of group equivariant non-expansive operators for topological data analysis and geometric deep learning
Tomas Gedeon Montana State University, USA	Extremal event graphs: a stable tool for analyzing noisy time series data
Xinqi Gong Renmin University of China, China	Multibody protein interaction complex structure prediction
Yasuaki Hiraoka Kyoto University, Japan	Girth, magnitude homology, and phase transition of diagonality
Nataša Jonoska University of South Florida, USA	Topological and algebraic models for studying DNA self-assembly
Jürgen Jost Max Planck Institute for Mathematics in the Sciences, Germany	Graphs, hypergraphs and network analysis
Vitaliy Kurlin University of Liverpool, UK	Geometric Data Science challenges and solutions
Claudia Landi Università degli Studi di Modena e Reggio Emilia, Italy	Computing the matching distance of 2-parameter persistence modules from critical values
Ran Levi University of Aberdeen, UK	Persistence module calculus
Jie Liang University of Illinois at Chicago, USA	Non-diffusive topological structure of reactions dynamics of complex molecules and stochastic landscapes of molecular networks
Haiyan Liu University of Science & Technology of China, China	Data-driven methods for de novo protein design
Benzhuo Lu (absent with apologies) Sheng Gui (represented) LSEC, Institute of Computational Mathematics, CAS, China	Molecular sparse representation by a 3D ellipsoid radial basis function neural network via L1 regularization
Kelly Maggs EPFL, Switzerland	Morse theoretic signal compression and reconstruction on chain complexes

Name & Affiliation	Talk Title
Konstantin Mischaikow Rutgers, The State University of New Jersey, USA	Identifying nonlinear dynamics with high confidence from sparse data
Julie Mitchell Oak Ridge National Laboratory, USA	Machine learning models for biophysics
Marian Mrozek Jagiellonian University, Poland	Marian Mrozek Jagiellonian University, Poland
Bradley J. Nelson The University of Chicago, USA	Induced maps and dimension reduction
Duc Nguyen University of Kentucky, USA	Persistent spectral graph and differential geometry-assisted AI for drug design
Andreas Ott Karlsruhe Institute for Technology, Germany	Vietoris-Rips transformations in multipersistent homology and an application to viral evolution
Keith Promislow Michigan State University, USA	Singular-Enthalpic limit for charged diblock polymer blends
Hans Riess University of Pennsylvania, USA	Lattice-valued network sheaves
Vanessa Robins Australian National University, Australia	Stability of persistence diagrams derived from digital images
Primoz Skraba Queen Mary University of London, UK	Understanding random persistence diagrams
Iskander Taimanov Novosibirsk State University, Russia	Topological and geometrical characterization of three-dimensional porous media
Julien Tierny CNRS- Sorbonne Université, France	Wasserstein distances, geodesics and barycenters of merge trees
Reidun Twarock University of York, USA	Virus structure and function through the lens of viral tiling theory: novel opportunities for antiviral therapy and virus nanotechnology
Chandra Verma A*STAR, Singapore	Some shape based explorations and manipulations of biomolecules
Andrei Yu. Vesnin Novosibirsk State University, Russia	Topological indices of fullerenes

Name & Affiliation	Talk Title
Bei Wang University of Utah, USA	Hypergraph Visualization: Topological Simplification and Comparisons
Rui Wang Michigan State University, USA	Persistent Laplacian and its applications in SARS-CoV-2
Junjie Wee Nanyang Technological University, Singapore	Mathematical AI for molecular sciences
Zenghui Zhang, John NYU Shanghai, China	Computational study of protein-ligand and protein-protein interactions
Yingkai Zhang New York University, USA	Integrating machine learning and molecular modeling for drug design
Huan-Xiang Zhou University of Illinois Chicago, USA	Thermodynamic and dynamic properties of phase-separated biomolecular condensates