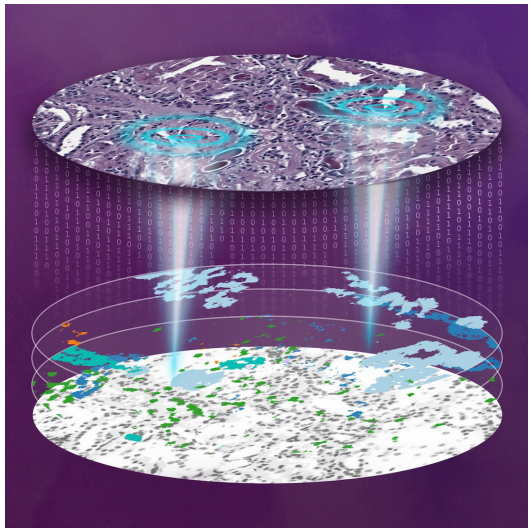
Berlin Mathematics Research Center MATH+

Berlin Mathematical School BMS

MATH+ Friday Colloquium

Friday, 1 November 2024 at 14:15

TU Berlin, Chemistry Building, Straße des 17. Juni 115, Room C130 *Tea & Cookies starting at 13:00*



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Heather Harrington

(MPI Dresden)

Topology Data Analysis for Multiscale Biology

Many processes in the life sciences are inherently multi-scale and dynamic. Spatial structures and patterns vary across levels of organisation, from molecular to multi-cellular to multi-organism. With more sophisticated mechanistic models and data available, quantitative tools are needed to study their evolution in space and time. Topological data analysis (TDA) provides a multi-scale summary of data.

Harrington will review the main tools in topological data analysis and how single and multi-parameter persistent homology provide insights to biological systems.

Heather Harrington is director and professor of mathematics at the Max-Planck-Institute in Leipzig. She leads the Algebraic Biology group, which combines algebra, geometry, topology, combinatorics with dynamical systems and biological data. Her research is devoted to developing new mathematical theory and methodologies to solve real-world problems arising in the biological, life and medical sciences.