

Algebra/Topology Seminar

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STUDYING 2-PARAMETER PERSISTENT HOMOLOGY VIA DIRECTED TOPOLOGY

Thursday, March 26, 2026
3:00 p.m. in Massry B012

ABSTRACT. Although multi-parameter persistence modules contain more information than single-parameter persistent homology, they are more difficult to understand, visualize, and integrate into a data analysis pipeline. We propose a new construction for relating the parameter space of a 2-parameter persistence module to a directed space. We discuss how this construction relates the set of 1-d persistence diagrams along non-decreasing paths for a particular 2-parameter persistence module, to the space of directed paths in the parameter space of that module. From this construction, we can use directed collapse to simplify the parameter space while still maintaining all necessary information to understand the module.

This is joint work with Robyn Brooks, Brittany Fasy, Lisbeth Fajstrup, and Elizabeth Vidaurre.