# Algebra/Topology Seminar

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## Stabilizing Decomposition of Multiparameter Persistence Modules

Thursday, October 5, 2023
3:00 p.m. in BB-B012

Abstract. How multiparameter persistence modules decompose as direct sums of indecomposable modules is well-understood from the perspective of pure representation theory. In topological data analysis, however, this understanding is unsatisfying, as decomposition is wildly unstable with respect to noise.

I will explain why naive attempts to build a theory of decomposition of multiparameter modules that is robust to noise tend to fail, and then present recent work showing that a decomposition stability theorem can be proved despite these difficulties. Finally, I will talk about a conjecture that would strengthen this result in some cases that are relevant for other areas of multipersistence, and (if time allows) how a version of this conjecture can be phrased in an elegant way using just basic graph theory and linear algebra.

The talk is based on the preprint `arXiv:2305.15550`.