



# AMS Student Chapter at MSU

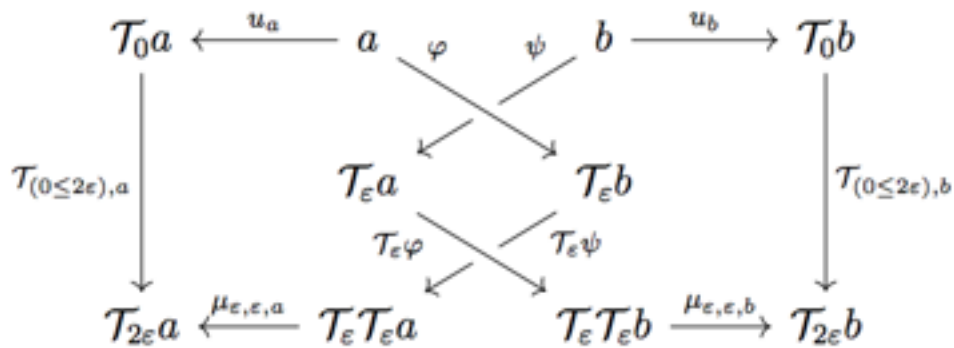


Speaker: Elizabeth Munch

Date: Jan 31, 2019, 4:00 pm - 5:00 pm

Title: The Interleaving Distance for a Category with a Flow

Place: C304 Wells Hall



All data has noise, and rigorously understanding how your analysis fares in the face of that noise requires a notion of a metric. The idea of the interleaving distance arose in the context of generalizing metrics for persistence modules from the field of topological data analysis (TDA). Essentially, the idea is that two objects in a category should be distance 0 if there is an isomorphism between them; the distance between two objects should be *almost* 0 if there is *almost* an isomorphism between them. Placed in the right context, we can measure what we mean by an "almost" isomorphism and use this to define a distance.

Building on the work of Chazal et al.; and Bubenick, Scott, and de Silva, we will discuss the generalization of the notion of the interleaving distance to a so-called "category with a flow". We will show that this generalization provides metrics for many different categories of interest in TDA and beyond, including Reeb graphs, merge trees, phylogenetic trees, and mapper graphs. This work is the result of collaborations with Anastasios Stefanou, Vin de Silva, and Amit Patel.



Association for Women in Mathematics