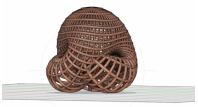
TEXAS STATE



Topology Seminar at Texas State

When: Friday, April 14, 2023, 11:00 a.m.

Where: DERR 333 *and* ZOOM (Zoom info at bottom of page)

Presenter: Dr. Anton Dochtermann

Title: Homomorphism complexes and homotopy for digraphs

Abstract: The neighborhood complex of a graph was introduced by Lovsz to provide topological lower bounds on chromatic number, and more general homomorphism complexes of graphs were further studied by Babson and Kozlov. Such 'Hom complexes' are also related to reconfiguration problems and a notion of discrete homotopy for graphs. Here we initiate the detailed study of Hom complexes for directed graphs (digraphs), which have applications in the study of graded posets and resolutions of monomial ideals. We establish a number of topological and categorical properties of Hom complexes, including relations to products and adjunctions, vanishing theorems for higher homology, as well as group actions that lead to an obstruction theory for graph homomorphisms. Finally, we show how paths in the internal hom objects of the category can be used to define various notions of homotopy for digraphs, and discuss connections to the topology of Hom complexes. This is joint work with Anurag Singh.

Zoom Information

Meeting URL (click this)
Meeting ID: 977 0390 3382
Password: manifolds