

Title: Topology of real matroid Schubert varieties

Abstract: Every linear representation of a matroid determines a matroid Schubert variety whose geometry encodes combinatorics of the matroid. When the representation is over the real numbers, we study the topology of the real points of the variety. Our main tool is a cell decomposition, which depends only on the oriented matroid structure and can be extended to define a combinatorially interesting topological space for any oriented matroid. Using this, we can explicitly compute presentations of invariants such as the fundamental group and integral cohomology.

This is joint work with Yu Li.