Combinatorics Seminar

Wednesday, November 8th, 2023

4:00-5:00 pm in Hume 321

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Some generalizations of the class of spikes

Abstract

Spikes (also called tipless spikes in the matroid theory literature) form a well-known class of matroids that are important in the study of matroid connectivity. These matroids have the property that every pair of elements is contained in both a 4-element circuit and a 4-element cocircuit. We will present a family of generalizations of spikes, which we call (s, t)-spikes, with the property that every s-element subset of the ground set is contained in a 2s-element circuit and every t-element subset of the ground set is contained in a 2t-element cocircuit. We call this property the $(s, 2s, t, 2t)$-property. Our main result is that all sufficiently large matroids with the $(s, 2s, t, 2t)$-property are (s, t)-spikes. This is joint work with Nick Brettell.