

Combinatorics Seminar

Friday, Nov. 2, 2012

2:00 pm in Hume 321

On Regular and Binary Matroids Without Small Minors

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ABSTRACT

A matroid is a mathematical set system that is a common generalization of the concepts of a graph and of a projective geometry. Many important results in combinatorics deal with excluded-minor characterizations of classes of graphs and matroids. One famous example of such a result is Kuratowski's Theorem which states that a graph is planar if and only if it is $\{K_5, K_{3,3}\}$ -free. Guoli Ding and Cheng Liu have characterized many classes of graphs that are H -free for graphs H with fewer than twelve edges. We have extended some of their results to the class of regular 3-connected matroids.

Dillon Mayhew and Gordon Royle recently characterized the class of binary internally 4-connected matroids that are prism-free. As an extension of their result, we have determined the structure of the class of binary 3-connected matroids that are (prism + e)-free.

We will also briefly discuss MACEK, a matroid computing program developed by Petr Hliněný that has proven to be particularly useful in our work in excluded-minor characterizations.