# Combinatorics Seminar

Thursday, May 12, 2011

3:00 pm in Hume 331

## Dr. James Shook

## On Finding a Minimum Toughness Condition for a $k$-tree to be Hamiltonian

### ABSTRACT

A graph is said to be chordal if it does not have an induced cycle greater than three. A vertex is said to be $k$-simplicial if its neighborhood is a $k$-clique. The smallest $k$-tree is a clique with $k$ vertices. A graph $G$ with more than $k$ vertices is said to be $k$-tree if it has a $k$-simplicial vertex $s_1$ such that $G - s_1$ is a $k$-tree. Note that a $k$-tree is a chordal graph.

In the paper "Tough enough chordal graphs are Hamiltonian" the authors G. Chen, M. S. Jacobson, A. E. Kézdy, and J. Lehel showed that 18-tough chordal graphs are Hamiltonian. It is believed that the actual bound is closer to 2-tough. I will discuss the status of this problem, and present some advances on finding a tight bound for $k$-trees.