

COMBINATORICS  
SEMINAR

*Thresholds for Random Geometric  $k$ -SAT*

Will Perkins  
Georgia Tech

**Abstract:** Random  $k$ -SAT is a distribution over boolean formulas studied widely in combinatorics, statistical physics, and theoretical computer science for its intriguing behavior at its phase transition. I will present results on the satisfiability threshold in a geometric model of random  $k$ -SAT: labeled boolean literals are placed uniformly at random in a  $d$ -dimensional cube, and for each set of  $k$  contained in a ball of radius  $r$ , a  $k$ -clause is added to the random formula. For all  $k$  we show that the satisfiability threshold is sharp, and for  $k = 2$  we find the location of the threshold as well. I will also discuss connections between this model and the random geometric graph.

Friday, November 8, 2013, 4:00 pm  
Mathematics and Science Center: W306

This is based on joint work with Milan Bradonjic.

MATHEMATICS AND COMPUTER SCIENCE  
EMORY UNIVERSITY