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.