

FALL, 2008

MATHEMATICS 290F

CURRENT LITERATURE SEMINAR IN TOPOLOGY

Wednesdays 3:00 - 5:00 in Math Sci 6221

Organizer: Robert Brown

This quarter the topic will be the Khovanov-Rozansky knot homologies. Starting with the work of Vaughn Jones in the 1980's (for which he won the Fields medal), several "quantum" invariants of knots have been constructed in the form of polynomials. In particular, for each positive integer n there exists a knot polynomial P_n associated to the Lie algebra $sl(n)$; these P_n 's are all specializations of a polynomial P in two variables called the HOMFLY. In 2004, Khovanov and Rozansky constructed some new invariants of knots, one for each n , in the form of homology theories whose Euler characteristics are the respective P_n 's. One year later, they also found a homology theory whose Euler characteristic is P . These theories have found applications in contact geometry and have inspired recent research in Floer homology.

In this seminar we will go over the definition of the Khovanov-Rozansky homologies and explore how they are related to each other, following a paper by J. Rasmussen.

First meeting: October 1 - Ciprian Manolescu "An Introduction to the Khovanov-Rozansky homologies"