

Tamas Kalman (Tokyo)

Title: *Relating Jones-type and Ozsváth-Szabó-type knot invariants* .

Abstract: Low-dimensional topology has recently been dominated by two theories. Heegaard Floer homology (when the perspective is narrowed to knots) can be viewed as a categorification of the Alexander polynomial. Khovanov-Rozansky homology categorifies the Jones and Homfly polynomials. I will report on work in progress aimed at finding new connections between the two theories, perhaps even an Ozsváth-Szabó type chain complex for Khovanov-Rozansky homology.

In the case of alternating knots, the project boils down to a new theory of (plane) bipartite graphs initiated by A. Postnikov. I will sketch this theory and show how it relates to the Alexander and Homfly polynomials, as well as the so-called Fox conjecture. In the non-alternating case, I will speculate how a generalization might occur through a connection to the branched double cover associated with the knot.

Parts of this work are joint with András Juhász, Hitoshi Murakami, Jacob Rasmussen, and Dylan Thurston.