

COLLOQUIUM
UNIVERSITY OF PITTSBURGH
TUESDAY, JANUARY 22, 2013
704 THACKERAY HALL
3:00 P.M.
EVGENY GORSKIY

DEPARTMENT OF MATHEMATICS
STONY BROOK UNIVERSITY

**COMPACTIFIED JACOBIANS,
CHEREDNIK ALGEBRAS & KNOT HOMOLOGY**

ABSTRACT: A complex plane curve singularity intersects a small three-dimensional sphere by a link. It turns out that many topological invariants of this link can be obtained from the algebraic geometry of this singularity. In particular, D. Maulik recently proved a conjecture of A. Oblomkov and V. Shende showing that the HOMFLY-PT polynomial of the link can be read off the Euler characteristics of the Hilbert schemes of points on the curve.

I will describe the structure of the homology of the Hilbert schemes on a curve $x^m = y^n$ which is expected to match the Khovanov-Rozansky homology of the corresponding torus knot. In particular, I will show its relation to the combinatorics of the bigraded Catalan numbers of A. Garsia and M. Haiman and representation theory of rational Cherednik algebras. The talk is based on the joint works with M. Mazin, A. Oblomkov, J. Rasmussen and V. Shende.

Refreshments served at 2:30 p.m.
in the Math Dept. COMMON ROOM, Thackeray 705

*The speaker is a candidate for a position in the Department.