



Speaker: Andrei Jorza
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Wednesday, March 26, 2014
3:00 PM
258 Hurley Hall

Title: Counting sheaves on surfaces

Abstract:

There is a rich theory of counting curves on manifolds which bridges algebraic geometry and physics. In the case of threefolds, Gromov-Witten theory formalized certain curve counts first obtained (correctly) by physicists, by expressing such curve counts as integrals with respect to a virtual class on a certain moduli space. Donaldson-Thomas theory and Pandharipande-Thomas theory produced frameworks for counting sheaves on threefolds, both conjecturally equivalent to Gromov-Witten theory.

The analogous picture for surfaces is incomplete. The Gromov-Witten theory has been calculated by Maulik, Pandharipande, and Thomas, and was shown to give rise to modular forms. In joint work with Benjamin Bakker we defined and computed analogous sheaf counts on surfaces via stable pairs of sheaves and showed that, in the case of K3 surfaces, the theory gives rise to modular forms of level 4.