

Algebraic Geometry Seminar

*Friday, January 20,
3:00 p.m. Room 383-N*

Matrix factorizations and cohomological field theory

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Abstract

I will describe recent joint work with Arkady Vaintrob on Fan-Jarvis-Ruan theory, which is an analog of Gromov-Witten theory where a target space is replaced by a quasihomogeneous isolated hypersurface singularity. In the case of simple singularities of type A it corresponds to the intersection theory on the moduli space of higher spin curves, and constitutes a framework for the famous Witten conjectures, proved by Kontsevich for A_1 -singularity and by Faber-Shadrin-Zvonkine in general. I will sketch the algebro-geometric construction of the relevant cohomological field theory based on the theory of matrix factorizations. The crucial construction of an analog of the virtual fundamental class involves derived categories of matrix factorizations in a global setting.