

Northeastern University



Mathematics Department

Geometry, Physics, and Representation Theory Seminar

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Thursday, November 8, 2:50-3:50 pm, Lake Hall 509

## Witten's conjecture for Mumford's kappa classes

### Abstract

Kappa classes were introduced by Mumford as a tool to explore the intersection theory of the moduli space of curves. There is a close connection between the intersection theory of kappa classes on the moduli space of unpointed curves and the intersection theory of psi classes on all moduli spaces: we show that the potential for kappa classes is related to the Gromov-Witten potential of a point via a change of variables given by complete symmetric polynomials, rediscovering a theorem of Manin and Zokgraf from '99. In contrast to their methods, the starting point of our story is a combinatorial formula that relates intersections of kappa classes and psi classes via a graph theoretic algorithm. Further, this story is part of a large wall-crossing picture for the intersection theory of Hassett spaces, a family of birational models of the moduli space of curves. This is joint work with Renzo Cavalieri.