

Stanford Algebraic Geometry — Seminar —

TOPOLOGICAL RECURSION RELATIONS BY LOCALIZATION

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Abstract

If a manifold possesses a group action, one can say much about its topology by using equivariant cohomology. In particular, the Atiyah-Bott localization formula allows one to derive facts about the manifold's global properties from knowledge of its fixed loci.

Localization has proved to be one of the most important techniques in Gromov-Witten theory. In this case, one studies maps of algebraic curves to a projective manifold that possesses one or many \mathbb{C}^* -actions. One can then relate facts about the moduli space of maps to the maps that are invariant under the \mathbb{C}^* -action. This has led to some very hard combinatorics and some very beautiful results.

By studying maps to \mathbb{P}^1 , we can derive some interesting facts about the cohomology of $\overline{\mathcal{M}}_{g,n}$, the moduli space of stable genus g curves with n marked points. In this talk, we will discuss a general method for finding relations among the fundamental classes of the boundary strata in the cohomology of $\overline{\mathcal{M}}_{g,n}$. We will outline the proof of a particular relation among codimension 2 boundary strata in $\overline{\mathcal{M}}_{1,4}$ and show some of its enumerative consequences.

Friday, November 7

3:15 p.m.

Room 383-N