

Stanford Algebraic Geometry — Seminar —

HECKE CORRESPONDENCE, STABLE MAPS AND KIRWAN'S PARTIAL DESINGULARIZATION

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Abstract

Kirwan's partial desingularization is a systematic way to partially resolve the singularities of a GIT quotient. (Partially means that we get an orbifold.) Partial desingularizations of various moduli spaces were constructed by this process and they have been quite useful in the study of moduli spaces. However moduli theoretic meaning of the partial desingularizations has been unknown for most cases. In this talk, I discuss a case where the partial desingularization is the solution to a natural moduli problem.

Let X be a smooth projective curve and fix a point x in X . Let N be the moduli space of stable rank 2 bundles with fixed determinant $\mathcal{O}(-x)$. Hecke correspondence gives us a family of conics (degree 2 rational curves) in N parametrized by the stable part M_X^s of the moduli space M_X of semistable rank 2 bundles on X with determinant $\mathcal{O}(y - x)$ for some y in X . We show that the moduli space of stable maps of genus 0 and degree 2 to N has two irreducible components which intersect transversely. One of them is Kirwan's partial desingularization of M_X and the other is the moduli space of conics in a projective bundle over the Jacobian of X , which is also shown to be the partial desingularization of a GIT quotient. The Hilbert scheme and the Chow scheme of conics in N are obtained by a blow-up followed by contractions.

Friday, February 10

3:15 p.m.

Room 383-N