COLLOQUIUM

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Topological aspects of GIT over the real and complex numbers

Mathematics and Statistics

Date: Friday, October 14, 2016
Time: 3:30 - 4:30 PM
Room: RIC 208

Abstract: When a reductive group G acts on a polarized projective variety X, Mumford's geometric invariant theory defines a quotient variety $X//G$. This construction is very simple to define algebraically, but the geometric relationship between X and $X//G$ is rather subtle. Over the complex numbers, the Kempf-Ness theorem provides an illuminating geometric construction of $X//G$ using Morse theory. Kirwan later used this Morse theory to relate the cohomology ring of $X//G$ with the equivariant cohomology of X.

I will give an overview of these ideas. If time permits, I will describe some recent work with my student Nasser Heydari proving analogues of these ideas over the real numbers.

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