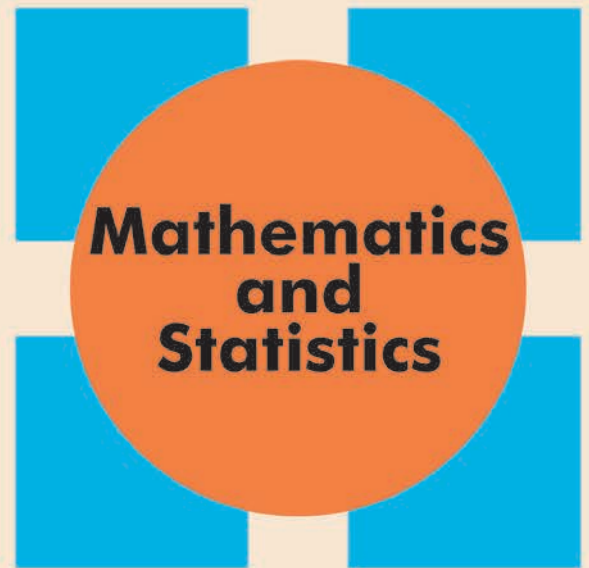


# COLLOQUIUM

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## Topological aspects of GIT over the real and complex numbers



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.