Queen's Algebraic Geometry
— Seminar —

The K-theory of symplectic quotients

MEGUMI HARADA
University of Toronto

Abstract

The topology of symplectic quotients is a topic of great interest in many different contexts, including combinatorics, algebraic geometry, representation theory, and gauge theory. We first give an overview and motivation for this subject, and then discuss a surjectivity result which expresses the K-theory of a symplectic quotient $M//G$ in terms of the equivariant K-theory of the original manifold M. This result is the natural K-theoretic analogue of the Kirwan surjectivity theorem for rational cohomology. Along the way, we prove a K-theoretic version of a key lemma of Atiyah and Bott, which states that the equivariant K-theory Euler class of a G-bundle is not a zero divisor, provided that an S^1 subgroup fixes precisely the zero section. This lemma is a key result in equivariant symplectic geometry, and (time permitting) we discuss some further applications of this lemma.

This is joint work, and work in progress, with Gregory D. Landweber.

Monday, October 31, 2005
4:45pm – 5:45pm
319 Jeffery Hall