1021-14-95   **Rebecca Goldin*** (`rgoldin@math.gmu.edu`), Mathematical Science, MS 3F2, George Mason University, 4400 University Dr., Fairfax, VA 22030. *The orbifold cohomology of a global quotient of a manifold by an abelian Lie group.*

Orbifold cohomology was introduced by Chen and Ruan in 2001 to explain "stringy Euler" and "stringy Hodge" numbers. It was conjectured at the time that the orbifold cohomoly (which has since become known as Chen-Ruan cohomology) of an orbifold would equal the ordinary cohomology of a crepant resolution, if one exists. This conjecture has since been modified, as it has found to be untrue without quantum corrections. However Chen-Ruan cohomology has become of interest in its own right.

In this talk, we will present two different contexts in which orbifold cohomology can be computed using symplectic techniques, obtaining combinatorial formulas. The first is when the orbifold in question is a symplectic reduction of a compact manifold with a Hamiltonian torus action. The second is an analogous quotient in the hyperkähler setting. As with ordinary cohomology of these spaces, techniques from equivariant cohomology can make our lives easier. I will make no assumptions about knowledge of symplectic geometry or equivariant cohomology. (Received August 28, 2006)