

1068-51-54

Tomoo Matsumura* (matsumura@math.cornell.edu), 310 Malott Hall, Mathematics Department, Ithaca, NY 14853, and **Tara Holm**. *Equivariant cohomology for Hamiltonian torus actions on symplectic orbifolds.*

We start with the definition of Hamiltonian R -actions on symplectic orbifolds $[M/S]$, where R and S are tori. We show an injectivity theorem and generalize Tolman-Weitsman's proof of the GKM theorem in this setting. The main example is the symplectic reduction $X//S$ of a Hamiltonian T -manifold X by a subtorus S of T . This includes the class of symplectic toric orbifolds which are classified by labeled polytopes by Lerman-Tolman. We apply our method to show that the equivariant cohomology ring of a symplectic toric orbifold is isomorphic over \mathbf{Z} to the Stanley-Reisner ring of the associated polytope. Furthermore, we define the equivariant Chen-Ruan cohomology ring and use the above results to establish a combinatorial method of computing this equivariant Chen-Ruan cohomology in terms of orbifold fixed point data. (Received January 09, 2011)