



Coloquio Inst-Mat

Instituto de Matemáticas

Universidad de Talca

Camino Lircay S/N, Campus Norte, Talca-Chile

The g-orbifold cohomology and crepant resolutions

Alessandro Chiodo*

Institut de Mathématiques de Jussieu,
UPMC-Paris 6, Paris, Francia

Abstract

We consider a Gorenstein orbifold X ; locally X is a quotient stack given by $[U/G]$ with U a smooth scheme, G a finite group acting with determinant 1 on the tangent space of the fixed points. There exists a singular space S , the quotient scheme U/G , whose geometric points are the points of X . In some cases (in low dimension for instance), there is a desingularization Y of S of crepant type (zero discrepancy: $K_Y = f^*K_S$). Therefore we have two (crepant) desingularizations $Y \rightarrow S$ and $X \rightarrow S$, a schematic one and a stack-theoretic one. The respective cohomology groups are isomorphic in the sense of Chen-Ruan orbifold cohomology. Elana Kalashnikov and I observe that this isomorphism generalizes to a variant of orbifold cohomology, which we call the g-orbifold cohomology. This allows us to explain a series of mirror duality theorems previously proven in a series of papers by a careful exhaustion of cases by Artebani, Boissière, Bott, Comparin, Lyons, Priddis, and Sarti.

*e-mail: alessandro.chiodo@imj-prg.fr