Orbifold cohomology multiplication in the symplectic case

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Abstract

Let V be a vector space, let $G \subset SL(V)$ be a finite subgroup, and let $X \to V/G$ be a smooth resolution of singular variety V/G with trivial canonical bundle K_X. McKay correspondence predicts cohomology groups of X in terms of the G-action on V. Recently Chen and Ruan constructed an associative product in these predicted groups which conjecturally coincides with the cup-product in $H^*(X)$. We consider the case when $G \subset Sp(V)$ preserves a symplectic form on V and prove Ruan's conjecture. This generalizes the work of Vasserot, Lehn-Sorger and Li-Qin-Wang on Hilbert schemes.