For Favour of posting

The Hong Kong University of Science and Technology

Department of Mathematics

Seminar on Geometry

Chow rings of crepant resolution: the motivic version of Ruan's conjecture

By

Professor Lie FU

Université Claude Bernard Lyon 1

Abstract

Given a Gorenstein orbifold, it is conjectured by Ruan that the orbifold cohomology (a.k.a. Chen-Ruan cohomology) is isomorphic, as complex algebras, to the quantum corrected cohomology ring of any crepant resolution of the underlying singular variety. We are interested in the Chow-theoretic (or motivic) analogue of this conjecture, particularly in the case that all quantum corrections vanish, for example when the resolution carries a hyper-Kähler structure. In a series of work joint with Zhiyu Tian and Charles Vial, we provide evidences for this motivic crepant/hyper-Kähler resolution conjecture in the following cases: surfaces, generalized Kummer varieties and Hilbert schemes of K3 or abelian surfaces. This computes the ring structure of their Chow rings, which were only known for cohomology. The main application of our results is in the direction of Beauville's conjecture on Chow rings of hyper-Kähler varieties. I will give the main idea of the proof in the K3 case, which uses Gromov-Witten theory and Voisin's theory on universally defined cycles.

Date : ***Tuesday, 17 Oct 2017***

Time: ***11:00a.m.-12:00noon***

Venue: ***Room 5508, Academic Building (near Lifts 25&26), HKUST***

All are welcome!