



## CHOW RINGS OF HILBERT SCHEMES OF K3 SURFACES VIA SYMMETRIC PRODUCTS.

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**Time:** 9:00-10:00 am., Tuesday, Oct. 31, 2017

**Venue:** Room 2213, East Main Guanghua Tower, Handan Campus

**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. We prove this motivic hyper-Kähler resolution conjecture in the case of Hilbert-Chow morphisms of symmetric powers of K3 surfaces. This computes the ring structure of the Chow ring of a Hilbert scheme of a K3 surface in terms of the Chow rings of powers of surface. This description was only known for cohomology by the work of Lehn-Sorger and Fantechi-Göttsche. The main application of our result is in the direction of Beauville's weak splitting conjecture on Chow rings of hyper-Kähler varieties. I will give the main idea of the proof, which uses Gromov-Witten theory and Voisin's theory on universally defined cycles. This is a joint work with Zhiyu Tian.