

***BIRATIONAL GEOMETRY AND DERIVED CATEGORY OF
HYPER-KÄHLER VARIETIES***

**Speaker: Junliang Shen
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Time: Sun., Jan. 5th, 14:30-15:30

Venue: Gu Lecture Hall

Abstract:

The D-equivalence conjecture (Bondal-Orlov, Kawamata) predicts that birational projective Calabi-Yau varieties have equivalent bounded derived category of coherent sheaves. This conjecture is wide open in high dimensions. Previously known examples include Bridgeland's work in dimension 3 and Halpern-Leistner's work for moduli of stable sheaves over a K3 surface. In this lecture I will discuss a proof of the conjecture for hyper-Kähler varieties of K3[n]-type. Our method relies on recent developments of the geometry of hyper-Kähler manifolds, combining Markman's hyperholomorphic bundles and the wall-and-chamber structure of the positive cone by Amerik-Verbitsky and Mongardi. If time permits, I will explain how to prove a generalized version of the D-equivalence conjecture for K3[n]-type with any Brauer class. This is based on joint work with Daves Maulik, Qizheng Yin, and Ruxuan Zhang.