Workshop & SCGP Weekly Talk Speaker: Daniel S Halpern-Leistner

Tuesday, October 31·1:15 – 2:15pm
Location: SCGP 102

Title: Quantum cohomology and derived categories

Abstract: I will review some conjectures and some theorems about the relationship between the quantum invariants of birationally equivalent projective manifolds, and how they lift to categorical statements about derived categories of coherent sheaves. I will then discuss a new framework for studying the structure of derived categories of coherent sheaves using Bridgeland stability conditions. This perspective gives a more concrete relationship between quantum invariants and derived categories: the quantum differential equation defines certain canonical flows on the space of stability conditions, which we conjecture lead to canonical semiorthogonal decompositions of the derived categories. Well-known conjectures, such as the D-equivalence conjecture and Dubrovin's conjecture, emerge naturally from this perspective.