

THE UNIVERSITY



OF HONG KONG

*Institute of Mathematical Research
Department of Mathematics*

GEOMETRY SEMINAR

The geometry underlying Donaldson-Thomas theory

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Abstract

Donaldson-Thomas invariants are algebraic analogues of Casson invariants. They are virtual counts of stable coherent sheaves on Calabi-Yau threefolds. Ideally, the moduli spaces giving rise to these invariants should be critical sets of "holomorphic Chern-Simons functions". Currently, such holomorphic Chern-Simons functions exist at best locally, and it is unlikely that they exist globally. I will describe geometric structures on the moduli spaces (some conjectural) that exist globally and reflect the fact that the moduli spaces look as if they were the zero loci of holomorphic maps. These are: symmetric obstruction theories, which prove that Donaldson-Thomas invariants are weighted Euler characteristics of moduli spaces, and derived scheme structures, exhibiting the moduli spaces as the classical schemes underlying schemes of Gerstenhaber algebras.

Date: March 5, 2013 (Tuesday)

Time: 4:00 – 5:00pm

Place: Room 210, Run Run Shaw Bldg., HKU

All are welcome