



THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

ALGEBRA AND GEOMETRY SEMINAR

**Wall-crossing for Calabi-Yau fourfolds
and applications**

by

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Abstract

My work focuses on proving wall-crossing for sheaves and pairs on Calabi-Yau fourfolds. It is desirable that the end result can have many concrete applications to existing conjectures. For this purpose, I introduce a new structure into the picture - formal families of vertex algebras. Apart from being a natural extension of the vertex algebras introduced by Joyce, they allow to wall-cross with insertions instead of the plain virtual fundamental classes. Many fundamental hurdles needed to be overcome to prove wall-crossing in this setting. They included constructing Calabi-Yau four obstruction theories on (enhanced) master spaces and showing that the invariants counting semistable torsion-free sheaves are well-defined. At the end, I will use the complete package to address existing conjectures with applications to 3-fold DT/PT correspondences.

Date : 02 May 2024 (Thursday)

Time : 4:30pm – 5:30pm

Venue : Room 3598 (Lifts 27/28)

All are Welcome!