SCMS Seminar

CURVE COUNTING ON ELLIPTIC CALABI-YAU 3-FOLDS AND JACOBI FORMS I & II

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Lecture 1

Time: 10:30-11:30 am., Tue, December 27, 2016

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

Abstract: A central problem in enumerative geometry and mathematical physics is to calculate topological string partition functions for Calabi-Yau 3-folds. Mathematically they are realized as curve counting invariants. In the first talk, I will review different curve counting theories, their structures, and connections. In particular, I will discuss how derived categories of coherent sheaves play a role in counting curves.

Lecture 2

Time: 2:30-3:30 pm., Fri, December 30, 2016

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

Abstract: In the second talk, I will focus on elliptic Calabi-Yau 3-folds. By physical considerations, Huang, Katz, and Klemm conjecture a deep connection between curve counting invariants for elliptic CY 3-folds and the theory of Jacobi forms. I will introducea mathematical approach to proving (part of) the HKK conjecture using symmetries of derived categories and wall-crossing methods. Finally, if time permits, I will also discuss the connection to the Igusa cusp form conjecture by Oberdieck and Pandharipande concerning K3 surfaces. This is based on joint work with G. Oberdieck.