FIELDS

THEMATIC PROGRAM ON **CALABI-YAU VARIETIES: ARITHMETIC, GEOMETRY AND PHYSICS**

Workshop 2: Enumerative Geometry and Calabi-Yau Varieties

ORGANIZERS **Mark Gross** (San Diego), **Radu Laza** (Stony Brook), **Jaume Gomis** (Perimeter), **Shing-Tung Yau** (Harvard)

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FIELDS INSTITUTE, ROOM 230

There has been a huge amount of progress in the last several years towards understanding mirror symmetry from a mathematical perspective. Divergent points of view on mirror symmetry, such as homological mirror symmetry, the Strominger-Yau-Zaslow conjecture, and calculations of various invariants and their generating functions, have been converging to produce a unified point of view. This involves aspects of algebraic, symplectic and tropical geometry. Topics within these three fields with close connections include:

- Various new invariants and their relationships, including
- Gromov-Witten invariants, their logarithmic (relative) generalizations, invariants of Landau-Ginzburg models, Donaldson-Thomas invariants, Gopakumar-Vafa invariants, and others.
- The A- and B-model sides of mirror symmetry via degenerations of Calabi-Yau varieties
- Recent progress on mirror symmetry at higher genus
- Current approaches to proving homological mirror symmetry
- Understanding the structure of the Fukaya category
- Quivers, Cluster varieties, Wall-crossing formulas
- The Gross-Siebert program
- New correspondence theorems (between tropical and holomorphic geometry)
- Calabi-Yau manifolds and integrable systems

CONFIRMED SPEAKERS

Mohammed Abouzaid (Columbia)
Dan Abramovich (Brown)
Chris Brav (IAS)
Jim Bryan (UBC)
Qile Chen (Columbia)
Yaim Cooper (Harvard)
Kevin Costello (Northwestern)
Duiliu E. Diaconescu (Alberta)
Sarah A. Filippini (Fields)
Kenji Fukaya (Simons Center)
Mark Gross (UC San Diego)
Maxim Kontsevich (IHES)
Yongbin Ruan (Michigan)
Helge Ruddat (Fields)
Yan Soibelman (Kansas St.)
Hsian-Hua Tseng (Ohio State)
Eric Zaslow (Northwestern)
Aleksey Zinger (Stony Brook)

THERE WILL BE A CONCENTRATED GRADUATE COURSE THE WEEK OF OCTOBER 7 AT THE FIELDS INSTITUTE PRIOR TO THE WORKSHOP 2 IN PREPARATION TO THE WORKSHOPS 2 AND 3.

THE SCHEDULE FOR THE CONCENTRATED GRADUATE COURSE AND FOR THE WORKSHOP AS WELL AS TITLES AND ABSTRACTS OF TALKS WILL BE POSTED ON THE PROGRAM WEBPAGE.

For more information, please visit:
www.fields.utoronto.ca/programs/scientific/13-14/calabi-yau

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The Fields Institute for Research in Mathematical Sciences
222 College Street, Toronto, ON M5T 3J1 Canada • Phone: (416) 348-9710 • Fax: (416) 348-9759 • www.fields.utoronto.ca