FIELDS

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

Workshop 4:
Hodge Theory in String Theory

ORGANIZERS **Charles Doran** (Alberta), **Radu Laza** (Stony Brook), **David Morrison** (Santa Barbara), **Johannes Walcher** (McGill)

November 18–22, 2013
FIELDS INSTITUTE, ROOM 230

Hodge theory has played an important role in understanding the interaction between mathematics and physics over the past two decades. For instance, the predictions of mirror symmetry can be understood as expansions of the period integrals at the boundary of the moduli space of complex structures. This workshop aims to survey and explore the interaction between Hodge theory and physics in the understanding of Calabi-Yau varieties. Specifically, we focus on the study of moduli spaces of Calabi-Yau varieties and their compactifications from the perspective of period maps, with applications to various string dualities. Conversely, we expect that ideas from physics will lead to new insights on the mathematical side.

Topics will include (but not limited to):

- Degenerations of Hodge structures
- Compactifications of period domains
- Period maps, Picard-Fuchs differential equations
- Hodge theory and algebraic cycles
- Arithmetic properties of periods
- String theory and Hodge theory

CONFIRMED SPEAKERS

Matthew Ballard (South Carolina)
Michael Dettweiler (Bayreuth)
Charles Doran (Alberta)
Alice Garbagnati (Milano)
Ludmil Katzarkov (Miami)
Matt Kerr (Washington U. St. Louis)
Andreas Malmendier (Colby College)
Anca Mustata (Cork)
David Morrison (Santa Barbara)
Hossein Movasati (IMPA)
Greg Pearlstein (Texas A & M)
Chris Peters (Grenoble)
Giulia Sacca (Stony Brook)
Sampei Usui (Osaka)
Claire Voisin (Jussieu)
Johannes Walcher (McGill)
Kang Zuo (Mainz)

PIMS

This is a joint workshop with PIMS CRG Program "Geometry and Physics".

There will be a concentrated graduate course the week of November 11 at the Fields Institute prior to workshop 4.

The Coxeter Lecture Series by Clarie Voisin will take place November 13, 14 and 18, 2013 at the Fields Institute.

The schedule for the concentrated graduate course and for the workshop as well as titles and abstracts of talks will be posted on the Fields program webpage.

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

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