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Geometry, Topology, and Physics Seminar

Algebraic Geometry and 6D Superconformal Field Theories

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Friday, October 2, 2015, 4:00 p.m.
Room 6635 South Hall

Abstract: Conformal field theories in dimensions above four are rather exotic objects, and it is only with the help of string theory (and its cousins) that examples were constructed starting in the 1990's. All known examples are supersymmetric.

In the past two years, there has been rather dramatic progress in classifying these theories in six dimensions (with minimal supersymmetry). The classification results at present concern a class of these theories whose construction and properties involve the algebraic geometry of elliptic fibrations. (Many of the intermediate results can be expressed purely in terms of quantum field theory, but some key steps require the assumption of an algebo-geometric construction.)

I will introduce this subject to both mathematicians and physicists in this lecture. I hope to give some followup lectures with additional details later in the quarter (or in future quarters).

This seminar is part of the NSF/UCSB 'Research Training Group' in Topology and Geometry. Information about future meetings can be found at http://www.math.ucsb.edu/~drm/GTPseminar/