Geometry, Topology, and Physics Seminar

SU(3) Manifolds and the Reid Fantasy

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Friday, February 29, 2008, 4:00 p.m.
Room 6635 South Hall

Abstract: In this talk I will discuss recent progress in string theory on the study of the moduli space of complex manifolds with SU(3) structure. In the special case of Kahler manifolds, these are just Calabi-Yaus; more generally, they are non-Kahler (but balanced) manifolds whose SU(3)-holonomy connection is not metric compatible. By studying Heterotic conformal field theories on very special examples of these manifolds (which endow the manifold with several decorations), we will find interesting paths on moduli space along which various 2- and 3-cycles shrink and grow: when the 2-cycle is large, we will find a Calabi-Yau; when the 3-cycle is large, we will find a non-Kahler manifold. Connecting these moduli spaces requires a non-local operation in the conformal field theory – bosonization and fermionization – which can be thought of as a kind of local surgery on the classical geometry.

Information about future meetings of this seminar can be found at
http://www.math.ucsb.edu/~malmendier/GTPseminar/