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Geometry, Topology, and Physics Seminar

Gauge Theories Labelled by Three-Manifolds

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Friday, October 28, 2011, 4:00 p.m.
Room 6635 South Hall

Abstract: We will discuss various operations on three-dimensional supersymmetric quantum field theories which are parallel to features of the decomposition of a three-manifold into ideal hyperbolic simplices. The discussion will include extensive background information on these three-dimensional field theories, in hopes of making the discussion accessible to mathematicians as well as physicists.

The first two operations, called S and T, were discussed by Witten for 3D conformal field theories with a $U(1)$ flavor symmetry, and together give an $SL(2,\mathbb{Z})$ action on the space of such theories. The other "operation" is known as mirror symmetry for 3D theories: like the more familiar mirror symmetry in 2D, it exchanges certain parts of the moduli spaces when passing from one theory to its mirror dual.

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