Berkeley-Stanford
Joint Algebraic Geometry Seminar

Tuesday, November 12, at Stanford

MARK GROSS
University of California at San Diego
3:00–4:00, Rm. 383-N

Affine structures, log structures, and mirror symmetry

Abstract: I will discuss an algebro-geometric version of the Strominger-Yau-Zaslow mirror symmetry conjecture. The original conjecture seeks to explain mirror symmetry via dual special Lagrangian torus fibrations on mirror pairs of Calabi-Yau manifolds. The algebro-geometric version takes the base of such fibrations as the fundamental object governing mirror symmetry, and constructs degenerations of Calabi-Yau manifolds from certain combinatorial structures on this base. Mirror symmetry is then given by a combinatorial duality, the discrete Legendre transform, between these combinatorial structures. I will try to explain the basic outline of this construction.

DAVE BENSON
University of Georgia
4:30–5:30, Rm. 380-X

Local cohomology and computation of group cohomology

Abstract: I shall talk about the following problem. Suppose that you want to compute the cohomology of a finite group. You might begin a projective resolution, and compute the cohomology in the first few degrees, and compute products in the Yoneda fashion by composing maps on resolutions. But how do you know when you have found all the generators and relations? Based on some ideas of Jon Carlson, I shall describe a method for telling when you can stop. The method is closely connected with local cohomology and Koszul complexes. It is related to a conjecture about the Castelnuovo-Mumford regularity of the cohomology ring, but does not rely on verifying this conjecture.

There will be a dinner afterward.

This seminar will alternate between Stanford and Berkeley. To organize transportation from Berkeley to Stanford, please contact David Eisenbud or Tom Graber. The next seminar will be Tuesday, December 10, at Berkeley.

`http://math.stanford.edu/~vakil/bs.html`