

New York Area Symplectic Seminar

at Columbia University

Friday, May 1, 2009
Math Bldg, Rm 520

1:10pm Eric Zaslow (Northwestern)

T-Duality and the Coherent-Constructible Correspondence

Abstract: I will describe a triangle of equivalences between three categories:

- a) coherent sheaves on a toric variety;
- b) a Fukaya category of Lagrangian submanifolds of a symplectic vector space; and
- c) a category of constructible sheaves on a real vector space.

The categories (a), (b), and (c) are the vertices of the triangle. The edge (ab) can be thought of as T-duality; (bc) can be thought of as microlocalization; and (ac) is the coherent-constructible correspondence. The edges are based on work of many authors, including (but not limited to) joint work with Nadler (bc) and Fang, Liu and Treumann (ac). To be concrete, the edge (ac) is based on the familiar assignment of a polytope to an ample line bundle on a toric variety – e.g., the hyperplane bundle on projective n -space gives a primitive simplex in n dimensions.

3:45pm Claude LeBrun (Stony Brook)

Einstein Metrics, Complex Surfaces, and Symplectic 4-Manifolds

Abstract: An Einstein metric is by definition a Riemannian metric of constant Ricci curvature. One would like to completely determine which smooth compact n -manifolds admit such metrics. In this talk, I will describe recent progress regarding the 4-dimensional case. These results specifically concern 4-manifolds that also happen to carry either a complex structure or a symplectic structure.