SUMMER WORKING SEMINAR ON
DIFFERENTIAL GEOMETRY

Thursdays: July 24, July 31 and August 7
at 11:00 in Vincent Hall 570

Bob Gulliver and Jiaping Wang will present parts of

**Minimizing area among Lagrangian surfaces: the mapping problem**

**Rick Schoen**, Stanford University
**Jon Wolfson**, Michigan State University

Schoen and Wolfson’s recent paper on Lagrangian-minimizing surfaces in a four-dimensional Kähler manifold \( N \) (a Kähler surface) is the opening thrust in what promises to be a long campaign to understand the geometry of symplectic manifolds and their relation to certain physically motivated ideas such as mirror symmetry. See *J. Differential Geometry* 58 (2001), 1–86. The best representative of a homology class which satisfies the necessary condition (governed by \([\omega]\)) for existence of a Lagrangian representative should be a Lagrangian surface which has least area among all Lagrangian surfaces. Such compact surfaces are minimal surfaces in the usual sense if they are immersed; however, there are homology classes in which singular Lagrangian surfaces may be found, but no immersed Lagrangian surfaces (the obstruction is measured by the first Chern class of \( N \)). In general, Lagrangian-minimizing surfaces satisfy a natural fourth-order condition.

**On July 24**, Bob Gulliver will give a brief overview, and then speak about the structure of singularities (which are shown to be isolated) and the criterion which must be satisfied by singularities of surfaces of minimum area among Lagrangian surfaces.

**On July 31 and August 7**, Jiaping Wang will speak about the monotonicity formula which is the main technical step of the Schoen–Wolfson paper, and far more subtle than the monotonicity of minimal surfaces.