Bay Area Differential Geometry Seminar
Saturday May 18, 2013
Department of Mathematics, Stanford University

• 10:00–11:00 **Reception, Morning Coffee in the Faculty Lounge on the Second Floor**

Lectures in Room 380F in the Basement

• 11:00-12:00 **Michael Hutchings, UCB**: *Four-dimensional symplectic embeddings and three-dimensional Reeb orbits*

We introduce some recent results concerning when one symplectic four-manifold with boundary can be symplectically embedded into another. These are related to questions about the dynamics of the Reeb vector field on a contact three-manifold.

• 12:00–1:45 **Lunch**

There are various places open on campus for lunch. Downtown Palo Alto is a five-minute drive or a twenty-minute walk. There will be a brief organizational meeting at 1:45.

• 2:00–2:45 **Xin Zhou, Stanford**: *Min-max minimal surfaces of high genus*

We will discuss an existence theorem for min-max minimal surfaces of arbitrary genus $g \geq 2$ by variational methods. We will show that the min-max critical value for the area functional can be achieved by the bubbling limit of branched minimal surfaces with nodes of genus g, together with possibly finitely many branched minimal spheres. We will also give a strong convergence theorem similar to the classical mountain-pass lemma.

• 2:45–3:30 **Yi Wang, Stanford**: *On some sharp inequalities via the method of optimal transport*

In this talk, we will discuss some sharp inequalities between the volume of a domain and the integral of the mean curvature or scalar curvature of its boundary. The results generalize the classical Alexandrov-Fenchel inequalities for convex domains. The proof utilizes the method of optimal transport. This is a joint work with Alice Chang.

• 3:30–4:15 **Afternoon Tea, Faculty Lounge**

• 4:15–5:15 **Jeff Viaclovsky, U.Wisconsin, Madison**: *Critical metrics on connected sums of Einstein four-manifolds*

I will discuss a gluing procedure designed to obtain canonical metrics on connected sums of Einstein four-manifolds. The main application is an existence result, using two well-known Einstein manifolds as building blocks: the Fubini-Study metric on CP^2, and the product metric on $S^2 \times S^2$. Using these metrics in various gluing configurations, critical metrics are found on connected sums for a specific Riemannian functional, which depends on the global geometry of the factors. This is joint work with Matt Gursky.

• 6:15 **Dinner**

The dinner will be a Chinese Banquet. The cost of dinner will be significantly subsidized for graduate students and postdocs. Please click on **"banquet link"** *below to sign up for the meal and to specify any dietary restrictions.*

BANQUET LINK