Bay Area Differential Geometry Seminar
Saturday, February 21, 2015
Stanford University
Department of Mathematics Room 380C

The seminar will take place from 10AM to 5PM on Saturday, February 21, 2015. Participants and their significant others are invited to a dinner to be arranged at a local restaurant on Saturday evening. The cost of the dinner will be reduced for students and postdocs. Details will be forthcoming on the signup page for the dinner (which you can access by this link: **signup list***).*
Directions to the Stanford Mathematics Department are available on the department website. Parking on the campus is plentiful and unrestricted on weekends.

• 10:00–11:00 **Reception, Morning Coffee**

• 11:00-12:00 **Paul Laurain, IMJ Paris 7**: *Quantization phenomena for conformally invariant problems .*

This lecture is devoted to a series of papers we have published with T. Rivière. First, we have been interested in giving a unified proof of some"classical" quantization phenomena for problems such as harmonic maps, J-holomorphic curves or prescribed mean curvature. Then, since this proof relies only on the common dominator of theses problems, namely conformal invariance, we have been able to apply this theory to solve open questions in conformal geometry. I will notably explain how this theory permits to study the moduli space of Willmore surfaces, first with fixed conformal class, and if I have enough time I will finally talk about how to deal with the case of degenerating conformal classes.

• 12:00–2:00 **Lunch**

There are several places on the Stanford campus that serve lunch. In addition, downtown Palo Alto is a 5-minute drive or a 20-minute walk. There will be a brief organizational meeting at 1:45.

• 2:00–3:00 **Jacob Bernstein, Johns Hopkins**: *A sharp lower bound on the entropy of closed hypersurfaces in low dimensions.*

The entropy is a geometric quantity introduced by Colding and Minicozzi that measures the complexity of a hypersurface. In recent work, L. Wang and I showed that, up to dimension six, the entropy of a closed hypersurface is uniquely minimized by the round sphere.

• 3:00–4:00 **Afternoon Tea-Coffee**

• 4:00–5:00 **Francisco Martin, Granada**: *Properly embedded minimal annuli in* $\mathbf{H^2} \times \mathbf{R}$.

Consider pairs of Jordan curves in the ideal boundary of $\mathbf{H^2} \times \mathbf{R}$ which are vertical graphs. We prove existence and non-existence results for properly embedded minimal annuli bounded by pairs of curves of this kind. On the way to obtain the existence theorems, we are able to set conditions on the boundary curves of such minimal annuli to ensure compactness theorems. This is joint work with L. Ferrer, R. Mazzeo and M. Rodriguez.

• 6:00 **Dinner** *(Please sign up using the link* **signup list** *at the top of the first page.)*