



Jornada de Geometría

Grupo de Investigación
PROBLEMAS VARIACIONALES EN GEOMETRÍA

con la colaboración de
RED ESPAÑOLA DE ANÁLISIS GEOMÉTRICO

4 de Diciembre de 2008
Salón de Grados. Edificio Mecenás

Programa

- **10:00-11:00 Jesse Raztkin** (University College Cork, Ireland).

Lower bounds for the first Dirichlet eigenvalue in wedge domains.

The classical Faber-Krahn inequality compares the first Dirichlet eigenvalue of the Laplacian for a bounded domain to that of a ball. I will discuss similar bounds for domains contained in wedges, both in Euclidean space and the sphere. If time allows, I will also discuss an application to Brownian pursuit. This is joint work with Andrejs Treibergs.

- **11:00-11:45 Coffe Break**

- **11:45-12:45 César Rosales** (Universidad de Granada)

The Bernstein problem and the classification of complete stable area-stationary surfaces in the Heisenberg group

We first consider the problem of finding all the entire area-stationary graphs in the sub-Riemannian Heisenberg group H^1 . This question has been well studied for t -graphs and for intrinsic graphs. In particular, examples of unstable entire area-stationary graphs may be given in H^1 . After discussing some stability results for complete graphs we state a joint result with A. Hurtado and M. Ritoré, where we prove that a C^2 complete stable area-stationary surface in H^1 must be a Euclidean plane or congruent to the hyperbolic paraboloid $t = xy$.

- **12:45-13:45 Laurent Mazet** (Université Paris 12, France)

Sharp length estimates for stable CMC surfaces.

In this talk, we prove that, in a stable cmc surface in R^3 , the intrinsic distance from a point to the boundary is less than $\pi/(2H)$. This estimate is sharp and can be extended to H^3 and S^3 .

- **14:00 Almuerzo / Lunch**

- **16:30-17:30 Benoît Daniel** (Université Paris 12, France).

Existence and uniqueness of constant mean curvature spheres in $Sol(3)$.

We study the classification of immersed constant mean curvature spheres in the homogeneous 3-manifold $Sol(3)$, i.e., the only Thurston 3-dimensional geometry where this problem remains open. Our main result states that, for every $H > 1/\sqrt{3}$, there exists a unique (up to translations) immersed CMC H sphere S_H in $Sol(3)$. Moreover, this sphere S_H is embedded, and is therefore the unique compact embedded CMC H surface in $Sol(3)$. The same results are obtained for all real numbers H such that there exists a solution to the isoperimetric problem with mean curvature H .

Joint work with Pablo Mira.

- **17:30-18:30 Francisco J. López** (Universidad de Granada).

Uniqueness of the Helicoid and Enneper's surface in R^3_1 .

In this talk we deal with the uniqueness of the Helicoid and Enneper's surface as maximal immersions in the Lorentz-Minkowski space R^3_1 . In both cases the surface contains a proper lightlike arc where the immersion folds back, and so the image via the immersion is a (double) surface without selfintersections with lightlike boundary of mirror symmetry.