



**PURDUE UNIVERSITY**

**Department of Mathematics Colloquium**

Speaker: Professor Ignacio Luengo, Universidad Complutense, Madrid, Spain  
Title: "Rational Cuspidal Curves, Surface Singularities and Rational Homology Spheres"  
Date: Tuesday, April 14, 2009  
Time: 4:30 P.M.  
Place: MATH 175

**Abstract**

I will report on some recent progress on the classification of plane rational cuspidal curves (RCC), where the term cuspidal means analytically irreducible and related open problems. They can be studied applying the theory of open surfaces to its complement in the plane. We use the theory of superisolated surface singularities to establish a connection between normal surface singularities whose link is an homology sphere (QHS) and plane rational cuspidal curves. We use this connection in one direction to give new properties of RCC that allows us to advance toward the classification of rational cuspidal curves and in the other direction to give counterexamples to several conjectures on QHS that relates topological and analytic invariant of the singularity like genus or the Seiberg-Witten invariant. This is a joint work program with J. Fernandez de Bobadilla, A. Melle and A. Nemethi.

**Refreshments will be served in the Math Library Lounge, 4:00 P.M.**