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**Speaker:** Fred Xavier  
University of Notre Dame

Friday, March 7, 2014  
4:30 PM  
231 Hayes-Healy Hall

**Title:** Some open problems in classical differential geometry

**Abstract:**

It was shown by Hilbert in 1901 that the abstract complete model of a surface of constant negative curvature cannot be smoothly realized in Euclidean 3-space. In this talk we will examine some of the ramifications of this fundamental result, including a conjecture of Milnor that relates neatly to both the Hilbert theorem and the Caratheodory conjecture on umbilical points in immersed 2-spheres. Some of the ideas involved come not only from differential geometry, but also from "surrounding" areas, such as dynamical systems, topology, and partial differential equations.