Colloquium

UNIVERSITY OF NOTRE DAME
Department of Mathematics

Speaker: Claude LeBrun
Stony Brook University

Wednesday, October 9, 2013
4:00 PM
117 Hayes-Healy Hall

Title: "Curvature Functionals, Kahler Metrics, and the Geometry of 4-Manifolds"

Abstract:

An Einstein metric is by definition a Riemannian metric of constant Ricci curvature. This talk will explore why the existence and uniqueness problems for Einstein metrics on smooth compact manifolds seem to behave differently in dimension 4 than in other dimensions.

Many of the most powerful techniques currently available for the construction of Einstein metrics rely on results from Kahler geometry. We will see that this is not just a matter of happenstance. Indeed, the 4-dimensional Einstein metrics arising from Kahler geometry are objectively "better" than others, in that they are "less curved" than other metrics, as measured by various curvature norms. We will not only see why this is true, but also explore its ramifications for the existence and uniqueness problems for 4-dimensional Einstein metrics.