PDE, Complex Analysis and Differential Geometry Seminar

UNIVERSITY OF NOTRE DAME
Department of Mathematics

Speaker: Martins Bruveris
Ecole Polytechnique Federale de Lausanne

Tuesday, February 4, 2014
11:00 AM
258 Hurley Hall

Title: Riemannian Metrics on the Space of Plane Curves

Abstract:

Riemannian metrics on the space of curves are used in shape analysis to describe deformations that take one shape to another and to define a distance between shapes. The space of curves is an infinite dimensional manifold and the Riemannian metrics that are of interest in shape analysis are weak, i.e., interpreted as maps from the tangent bundle to its dual, they are injective, but not surjective. One of the consequences is that the geodesic distance induced by these metrics can vanish. This talk will present examples, where this happens, and then show how to modify the metric to prevent the vanishing of the distance. The second part of the talk will focus on a particular class of metrics, metrics of Sobolev type, and discuss their mathematical properties.