

CALIFORNIA STATE UNIVERSITY, LONG BEACH

THE MATHEMATICS COLLOQUIUM

presents

Dr. Helena Noronha

California State University, Northridge

speaking on

Soliton Geometry

Friday, October 15, 2004

12:00PM-1:00PM

LA5-267

Abstract: The theory of completely integrable (soliton) systems has many interpretations in Differential Geometry. A classical example, dating back to nineteenth century, is the Backlund Theorem, which asserts a correspondence between solutions of the sine-Gordon equation (SGE) and surfaces of constant negative curvature. Moreover, transformations that take one such surface to another, are, from the analytic point of view, maps taking a solution of the SGE to another solution of the same equation. These transformations have been called (classical) Backlund transformations.

The literature in soliton theory is enormous, so in this talk we will focus on only one aspect of this theory, namely the Backlund transformations. We will show how a recent method developed by Terng and Uhlenbeck generalizes the classical connection between solitons and differential geometry mentioned above. Since our examples will be on surfaces, the talk will be accessible to graduate and advanced undergraduate students.