



PURDUE UNIVERSITY

Lecture in Memory of Leonard Berkovitz

Speaker: Professor H.T. Banks, North Carolina State University
Title: "Relaxed Controls, Differential Games, Preisach Hysteresis, and Mixing Distributions in Statistical Inverse Problems"
Date: Tuesday, October 26, 2010
Time: 4:30 P.M.
Place: MATH 175

Abstract

In numerous applications in the biological and engineering sciences, one encounters inverse problems where the uncertainty and/or variability in parameters and mechanisms to be modeled are a fundamental part of the problem formulation. This is in addition to the data-driven uncertainty that arises naturally in most inverse problems. We discuss a theoretical framework and an associated computational methodology for such problems. In statistical inverse problem formulations these problems are usually discussed in the context of "mixing distributions", but the mathematical foundations can be found in much earlier work on relaxed controls (sliding regimes, chattering controls) of Young, Filippov, Warga,...., the early treatment of two player non-cooperative differential games, and more recently in the treatment of Preisach hysteresis in smart materials. In this expository lecture we outline these connections and present results from our recent efforts using these ideas in several applications.

Refreshments will be served in the Math Library Lounge at 4:00 p.m.