

**DEPARTMENT OF PHYSICS SEMINAR
TEXAS SOUTHERN UNIVERSITY**

**Boundary Control Approach to Inverse Spectral and
Dynamical Problems**

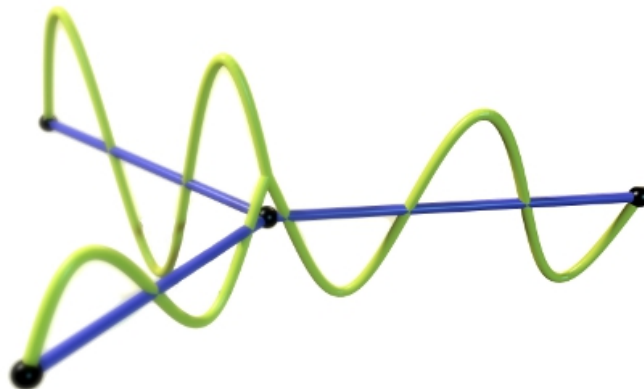
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Monday, January 28th, 2013
3:30 p.m. – 4:30 p.m.

Room 152. Science and Technology Building

Abstract

The Boundary Control (BC) method is based on the deep connection between control theory for partial differential equations and inverse problems of mathematical physics and offers an interesting and powerful alternative to previous identification techniques based on spectral or scattering methods. This approach has several advantages: (i) it is applicable to a wide range of linear lumped and distributed systems and reconstruction situations; (ii) it is, in principle, dimension-independent; (iii) it lends itself to straightforward algorithmic implementations. Being originally proposed for solving the boundary inverse problem for the multidimensional wave equation, the BC method has been successfully applied to all main types of linear equations of mathematical physics. In this talk we discuss connections between the BC method and the classical Gelfand-Levitan and Krein theories, and the recently proposed Simon and Remling approaches. We also demonstrate how our approach can be extended to inverse problems for differential equations on graphs.



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