

WICHITA STATE UNIVERSITY

Department of Mathematics and Statistics

*The Lecture Series in the
Mathematical Sciences Presents Our Guest:*

Prof. Roberto Triggiani

University of Virginia, Charlottesville

*"The Parabolic-Hyperbolic System of Fluid-Structure
Interaction: Well-Posedness, Spectral Analysis, Strong
and Exponential Stability, Backward Uniqueness"*

Abstract:

In 3-d or 2-d, we consider an elastic structure (described by the system of dynamic elasticity) immersed in a fluid (Navier-Stokes), with coupling taking place at the interface. In this preliminary analysis, the elastic structure is fixed but vibrates (small but rapid vibrations). In the case of the linear Navier-Stokes, we shall present the following problems:

- a) semigroup well posedness in the natural finite energy space, with explicit generator;
- b) backward uniqueness of such (parabolic-hyperbolic) semigroup;
- c) spectral analysis of the generator (and its adjoint);
- d) analysis of strong stability of the system;
- e) exponential stability of the system with dissipation at the interface.

All these are recent results obtained jointly with George Avalos (U of Nebraska)

**Friday, November 2, 2007
3:00 PM in 372 Jabara Hall**

*Please come join us for refreshments before the lecture
at 2:30 p.m. in room 353 Jabara Hall.*