

1043-35-55

Roberto Triggiani* (rt7u@virginia.edu), Department of Mathematics, University of Virginia,
P. O. Box 400137, Charlottesville, VA 22904. *Parabolic-Hyperbolic Fluid-Structure Interaction.*

We consider the linear version (Stokes-Lame) of an established model arising in fluid-structure interaction, where the structure (system of dynamic elasticity, hyperbolic) is immersed in a fluid (Navier-Stokes, parabolic) and vibrates (but is fixed), with coupling taking place at the interface between the two media. We then provide recent results on the following topics:

- (a) semigroup generation on the space of finite energy, with explicit generator;
- (b) spectral analysis of the generator;
- (c) lack of strong stability (the origin is an eigenvalue) and related spectral location on the imaginary axis, dependent on the shape of the structure;
- (d) backward uniqueness of the parabolic-hyperbolic semigroup (a);
- (e) higher regularity of the solutions, non-trivial issue of importance, as the resolvent of the generator is *not* compact on the space of finite energy;
- (f) complementing (c), uniform stabilization, when a dissipative term is included at the interface.

This is joint work with G. Avalos (a, b, c, d, f) and with G. Avalos and I. Lasiecka (e). (Received August 13, 2008)