
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)