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Francesca Bucci* (francesca.bucci@unifi.it), Dipartimento di Matematica e Informatica,
Via S. Marta, 3, 50139 Firenze, Italy. *Stability analysis and control theoretic properties of a
fluid-structure interaction.*

The talk will deal with certain analytical properties of a well-recognized mathematical model for a fluid-structure interaction (FSI). The Partial Differential Equation (PDE) system comprises linearized Navier-Stokes equations for the dynamics of a (viscous, incompressible) fluid in a container \mathcal{O} , and an elastic plate equation for the displacements of a part of its boundary. We will report recently obtained results about uniform stability properties of solutions to the PDE problem, in the absence of dissipation in the plate equation, whose proof is based on a frequency domain analysis rather than on energy/multiplier methods.

In addition, we will discuss the distinct features of the FSI under significant boundary control actions, along with the consequent challenges which are encountered in the study of associated optimal control problems (with quadratic functionals). A comparison with different FSI will be provided.

(The talk is based on joint work with George Avalos (University of Nebraska-Lincoln, USA)) (Received January 14, 2015)