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Lorena Bociu* (lvbociu@ncsu.edu), Department of Mathematics, Box 8205, NC State University, Raleigh, NC 27695, and **Jean-Paul Zolesio**. *Optimal Control in a Free Boundary Fluid-Elasticity Interaction*. Preliminary report.

The talk addresses the problem of minimizing turbulence inside fluid flow in the case of a free boundary interaction between a viscous fluid (described by the 3D Navier-Stokes equations) and a moving and deforming elastic body (modeled by the nonlinear equations of elastodynamics.). This is particularly relevant in the design of small-scale unmanned aircrafts and the problem of reducing turbulence in blood flow in stenosed or stented arteries. The issue is addressed from the point of view of optimal control, i.e. determining the optimal action upon the system in order to minimize turbulence within the flow. (Received January 22, 2014)