

On the fluid-structure interaction problem with heat exchange

Srđan Trifunović

Department of Mathematics and Informatics, University of Novi Sad, Serbia
srdjan.trifunovic@dmi.uns.ac.rs

Abstract

Here, I will talk about a nonlinear interaction problem between a thermoelastic shell and a heat-conducting fluid. The shell is governed by linear thermoelasticity equations and constitutes a time-dependent domain which is filled with a fluid governed by the full Navier-Stokes-Fourier system. The fluid and the shell are fully coupled, giving rise to a new previously unstudied interaction problem involving heat exchange. The existence of a weak solution for this problem is obtained by combining three approximation techniques - decoupling, penalization and domain extension for fluid.

This talk is based on a joint work with Václav Mácha, Boris Muha, Šarka Nečasová and Arnab Roy