Maximal regularity for a compressible fluid-structure interaction system with Navier slip boundary conditions

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Abstract

We study a fluid-structure interaction system where the fluid is described by the compressible Navier–Stokes equations and the elastic structure by a damped plate equation. The fluid occupies a three-dimensional periodic domain, with the structure located on the upper part of its boundary. Under Navier slip boundary conditions, we aim to establish the local-in-time existence and uniqueness of strong solutions within the L^p–L^q maximal regularity framework.

This work is part of an ongoing research project carried out in collaboration with Šárka Nečasová and Kuntal Bhandari.

Keywords: Compressible Navier-Stokes system, damped beam equation, strong solutions.