

# Existence of strong solutions for a compressible viscous fluid and a wave equation interaction system

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## Abstract

In this talk, we consider a fluid-structure interaction system where the fluid is viscous and compressible and where the structure is a part of the boundary of the fluid domain and is deformable. The reference configuration for the fluid domain is a rectangular cuboid with the elastic structure being the top face. The fluid is governed by the barotropic compressible Navier–Stokes system, whereas the structure displacement is described by a wave equation. We show that the corresponding coupled system admits a unique, locally-in-time strong solution for an initial fluid density and an initial fluid velocity in  $H^3$  and for an initial deformation and an initial deformation velocity in  $H^4$  and  $H^3$  respectively.

This is a joint work with Debayan Maity (TIFR-CAM, India) and Takéo Takahashi (INRIA-Nancy, France).