

# Regularity of a weak solution to a linear fluid-composite structure interaction problem

Marija Galić

Faculty of Mechanical Engineering and Naval Architecture, University of Zagreb

In this work, we deal with the regularity of a weak solution to the fluid-composite structure interaction problem introduced in [1]. The problem describes a linear fluid-structure interaction between an incompressible, viscous fluid flow, and an elastic structure composed of a cylindrical shell supported by a mesh-like elastic structure. The fluid and the mesh-supported structure are coupled via the kinematic and dynamic boundary coupling conditions describing continuity of velocity and balance of contact forces at the fluid-structure interface. In [1], it is shown that there exists a weak solution to the described problem. By using the standard techniques from the analysis of partial differential equations we prove that such a weak solution possesses an additional regularity in both time and space variables for initial and boundary data satisfying the appropriate regularity and compatibility conditions imposed on the interface.

## References

- [1] Sunčica Čanić, Marija Galić, Matko Ljulj, Boris Muha, Josip Tambača, and Yifan Wang. Analysis of a linear 3d fluid–mesh–shell interaction problem. *Zeitschrift für angewandte Mathematik und Physik*, 70(2):44, 2019.