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FLUID-STRUCTURE INTERACTION IN MULTIPHYSICS SYSTEMS

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ABSTRACT

Currently available computational capabilities make the coupling of multiple physical systems an intriguing option in the pursuit of scientific prediction or engineering design. Multiphysics models allow to relax the assumptions of decoupling and to provide insights on the coupling mechanisms themselves. Fluid-Structure Interaction (FSI) is a problem in which a multiphysics approach can lead to fascinating insights, both for biological systems and engineering scenarios. The complexity of this problem gave rise to broad variety of computational solutions, complying with partitioned or monolithic approaches, finite-differences or finite-elements methods, immersed or boundary-complying techniques. In this connection, each strategy has been developed to properly address a specific sub-class of FSI problem.

The aim of this mini symposium is to gather recent advancements for the comprehension of multiphysics systems, where FSI plays a crucial role. We warmly encourage submissions covering a wide range of application fields, including cardiovascular and respiratory problems [1], locomotion (swimming/flying) of animals and bio-inspired devices [2,3], transport of particles and vesicles, hydraulic fracturing of immersed structures [4], to name a few. A debate

among complementary expertise is fostered, highlighting advantages, drawbacks, potentialities, and limitations of cutting-edge research for FSI applications.

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