

Coupling schemes for the FSI forward prediction challenge: Comparative study and validation

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In this talk we present a numerical study in which several solution procedures for incompressible fluid-structure interaction (FSI) are compared and validated against the results of an experimental FSI benchmark. We consider an archetypal sample of state-of-the-art numerical methods for FSI covering the three main families of coupling schemes: strongly coupled, semi-implicit and loosely coupled. All the solution procedures discussed are partitioned and, from the coupling algorithm standpoint, parameter free. The comparisons indicate that strong coupling can be efficiently avoided, via semi-implicit and loosely coupled schemes, without compromising stability and accuracy.