Reduced Order Methods for Fluid-Structure Interaction Problems

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ABSTRACT

We introduce the state of the art for reduced order methods in fluid-structure interaction parametric problems with monolithic and segregated approaches. Several aspects are taken into consideration: stability of the approximation, algebraic stability, reduced basis enrichment, fluid-structure interface management, reduced order coupling conditions between pressure of the fluid and stresses of the structure, as well as domain decomposition and an optimal flow control approach. The reduced order methods are based on POD-Galerkin approaches. An important feature of the problems is the parametric approach, as well as the capability to solve complex multiphysics coupled problems within an offline-online computational setting.

Work in collaboration with Yvon Maday

REFERENCES
