

APPLIED MATHEMATICS COLLOQUIUM

Over-coming fluid-structure instabilities for incompressible flows and light bodies

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Abstract: The added-mass instability has, for decades, plagued partitioned fluid-structure interaction (FSI) simulations of incompressible flows coupled to light solids and structures. Many current approaches require tens or hundreds of expensive sub-iterations per time-step. In this talk some new stable partitioned algorithms are described for coupling incompressible flows with (1) compressible elastic bulk solids, (2) thin structural beams and (3) rigid bodies. These added-mass partitioned (AMP) schemes require no sub-iterations, can be made fully second- or higher-order accurate, and remain stable even in the presence of strong added-mass effects. These schemes are implemented using moving and deforming overlapping grids with the Overture framework.

This is joint with the Numerical Methods for Partial Differential Equations Seminar

**Wednesday September 21, 2016
4:30 PM
Room 2-105**

Applied Math Colloquium: <http://www-math.mit.edu/amc/fall16/>
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