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**Qi Tang\***, Rensselaer Polytechnic Institute, 110 8th Street, Troy, NY 12180, and **J. W. Banks**, **W. D. Henshaw** and **D. W. Schwendeman**. *A Stable FSI Algorithm for Rigid Bodies and Incompressible Flows*.

A stable added-mass/added-damping partitioned algorithm is developed for fluid-structure interaction (FSI) problems involving viscous incompressible flow and rigid bodies. The algorithm remains stable, without sub-iterations, even for light rigid-bodies when added-mass and viscous added-damping effects are large. A fully second-order accurate implementation of the scheme is developed based on a fractional-step method for the incompressible Navier-Stokes equations using finite difference methods and overlapping grids to handle the moving geometry. A number of difficult benchmark problems will be presented to verify the proposed algorithm. (Received January 09, 2017)