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A fixed-grid model for simulation of a moving body in free surface flows

A two-dimensional computer model is developed to simulate free surface flow interaction with a moving body using a fixed-grid system. The two-phase flow model is based on a viscous incompressible two-fluid model with an oscillating circular cylinder. This method is based on a finite volume discretization of the two-dimensional unsteady Navier–Stokes equations and uses improved volume-of-fluid method for the displacement of the free surface. The code validations in special cases show good comparisons with previous experimental and numerical results.