Abstract Submitted
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A balanced-force conservative volume-of-fluid method for simulating two-phase flows on unstructured grids[1] CHRISTOPHER IVEY, PARVIZ MOIN, Center for Turbulence Research, Stanford University — A balanced-forced conservative volume-of-fluid method for simulating two-phase flows on unstructured grids is presented. The two-phase Navier-Stokes equations are solved using a median-dual-partitioned collocated node-centered finite-volume discretization and a specialized fractional-step method. Conservative mass and momentum convection fluxes are calculated using a novel volume-of-fluid method. Accurate interface normals and curvatures are calculated on the non-convex median-dual mesh using the recently proposed embedded height-function technique. Spurious currents are minimized using a balanced-force algorithm and the continuum-surface force description of surface tension. The results of several two- and three-dimensional benchmark test cases on various unstructured meshes demonstrate the effectiveness of the proposed proposed two-phase flow solver.

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