

Abstract Submitted
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A Two Fluid Algorithm for Incompressible Flows Laden with Low Stokes Number Particles BABAK SHOTORBAN, Department of Mechanical & Aerospace Engineering, The University of Alabama in Huntsville — For small Stokes numbers the particle velocity can be expressed in terms of the velocity and acceleration of the carrier phase through a series expansion [Maxey, JFM, 1987]. Consequently, the back-way coupling effect of particles on the carrier phase can be accounted for only in its momentum equation through modifying its density via a two fluid approach. The modified density is a function of the particle volume fraction. A new algorithm is proposed to solve this momentum equation for an incompressible carrier phase based on the projection method of Chorin, Math. Comp. 1968. Some benchmark problems are solved to test the new algorithm.

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