Abstract Submitted
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Towards numerical simulation of bubbly flows in complex geometries[1] MICHAEL MATTSON, KRISHNAN MAHESH, University of Minnesota — We are developing the LES capability for bubbly flows in complex geometries using unstructured grids and an Euler–Lagrangian methodology. Two Lagrangian bubble models are considered: (i) the bubbles are treated as a dispersed phase in the carrier fluid, and individual bubbles are point particles governed by an equation for bubble motion and (ii) the force coupling method by Maxey *et al.* [*Fluid Dyn. Res.*, **32** (1997), 143-156]. The evolution of the bubble radius (assuming spherical bubbles) is governed by the Rayleigh–Plesset equation and integrated using a Runge–Kutta integrator with adaptive time-stepping. The talk will discuss numerical issues and contrast results between the two methodologies. Numerical results ranging from the motion of individual bubbles in channels and around bodies to drag reduction by bubbles in turbulent channel flow will be presented.

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