

Abstract Submitted
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Large eddy simulation of hydrodynamic cavitation¹ MRUGANK BHATT, KRISHNAN MAHESH, Univ of Minnesota - Twin Cities — Large eddy simulation is used to study sheet to cloud cavitation over a wedge. The mixture of water and water vapor is represented using a homogeneous mixture model. Compressible Navier–Stokes equations for mixture quantities along with transport equation for vapor mass fraction employing finite rate mass transfer between the two phases, are solved using the numerical method of Gnanaskandan and Mahesh (International Journal of Multiphase Flows, 2015, 70:22–34). The method is implemented on unstructured grid with parallel MPI capabilities. Flow over a wedge is simulated at $Re = 200,000$ and the performance of the homogeneous mixture model is analyzed in predicting different regimes of sheet to cloud cavitation; namely, incipient, transitory and periodic, as observed in the experimental investigation of Harish *et.al.* (Journal of Fluid Mechanics, 2016, 802:37–78).

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