

Abstract Submitted
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Large scale simulation of particle laden flows using surface-resolved unstructured overset meshes¹ WYATT HORNE, KRISHNAN MAHESH, University of Minnesota — Particle-laden flows often involve a large range of length scales spanning from large convective scales down to scales near that of the length scale of individual particles. Resolving the fluid features at and below that of individual particles for cases with many moving particles presents difficult numerical challenges. We present a method that seeks to simulate such cases for many moving particles ($O(100,000)$ particles) that uses surface-resolved unstructured overset meshes. Details of the method are overviewed including communication strategies, mesh connectivity, particle movement and the base fluid solver. Simulation results are presented from simulations of single moving particles and from large scale particle-resolved direct numerical simulations of many moving particles.

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Wyatt Horne
University of Minnesota

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