

Abstract Submitted
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Development of a Four-Way-Coupled Lagrangian Particle Method for Discontinuous Galerkin Schemes¹ ERIC CHING, MATTHIAS IHME, Stanford University — In this talk, we present an Euler-Lagrange methodology within the framework of discontinuous Galerkin methods. We discuss strategies to track particle trajectories through curved elements near walls while taking into account finite particle sizes. The back-coupling of particles to the carrier gas is treated in an efficient manner. In addition, we introduce a particle-particle collision algorithm that utilizes information provided by the geometric mapping from physical space to reference space. In doing so, the proposed algorithm reduces the number of particle pair inspections compared to standard methods. The algorithm is verified by drawing comparisons to kinetic theory. To demonstrate the capability of the multiphase flow solver, we consider a variety of test cases that include hypersonic dusty flows over blunt bodies and erosive action of sand blasting.

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