Abstract Submitted
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Particle resolved simulations a of shock passing through a bed of spherical particles[1] YASH MEHTA, University of Florida, Los Alamos National Laboratory, THOMAS L. JACKSON, SIVARAMAKRISHNAN BALACHANDAR, University of Florida, JONATHAN REGELE, XCP-4, Los Alamos National Laboratory — The study of shock-particle interaction has been largely motivated because of its extensive applications. The complex interaction between the compressible flow features, such as the shock wave, the contact discontinuity, the expansion fan, and the dispersed phase makes this multi-phase flow very difficult to predict and control. In this talk, we will be presenting results on particle-resolved inviscid simulations of a shock interaction with a random bed of particles. A detailed analysis of the inviscid forces experienced by the particles will be discussed and the effect of particle volume fraction and strength of the incident will be investigated. One of the interesting observation from the simulation results is the flow field fluctuations that arise due to the presence of randomly distributed particles. We compute the magnitude of the RMS velocity and the pseudo turbulent Reynolds stress to understand the importance of the flow field fluctuations.

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