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Towards Time-Resolved Particle Image Velocimetry Measurements during Shock-Particle Curtain Interactions JUSTIN WAGNER, STEVEN BERESH, EDWARD DEMAURO, BRIAN PRUETT, PAUL FARIAS, Sandia National Laboratories — Recent experiments in the Multiphase Shock Tube (MST) have provided rare data for the interaction of a planar shock wave with a dense curtain of particles having a volume fraction of about 20 percent. Through new models validated with MST data, it has been demonstrated that dense particle distributions lead to a significant increase in interphase momentum transfer and a prolonged flow unsteadiness. Increased knowledge of the particle dispersal necessitates measurements of the surrounding turbulent and unsteady gas phase. Towards this end, gas velocity measurements using particle image velocimetry (PIV) are presented using a conventional 10-Hz PIV system for an interaction of a Mach 1.4 shock wave with the dense curtain. Additionally, time-resolved PIV measurements in the MST using a pulse-burst laser are presented and progress made towards applying this diagnostic to shock-particle curtain interactions is discussed.

Justin Wagner
Sandia National Laboratories

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