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Drag measurements of shock accelerated particles GREG ORLICZ, ADAM MARTINEZ, KATHY PRESTRIDGE, Los Alamos National Laboratory, EXTREME FLUIDS TEAM — The horizontal shock tube facility at Los Alamos is used to investigate the drag forces on micrometer sized solid particles dispersed in air when they are accelerated by a shock. Eight-frame, high-speed particle tracking velocimetry/accelerometry (PTVA) diagnostics are implemented to measure the trajectory of individual particles, and a shadowgraphy system measures the shock location during experiments. Incident shock Mach number, particle diameter, and particle density are varied. We compare the measured position, velocity and acceleration histories to those given by the quasi-steady drag approximation and other empirical unsteady drag models. Estimations of the drag coefficients are found to be higher than those for steady drag. Measurements at this facility will be used to further develop and validate empirical models of unsteady drag.

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