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Attenuation of transmitted shock by a particle-seeded layer¹ PETER VOROBIEFF, University of New Mexico, GUSTAAF JACOBS, TZ-TING HUNG, San Diego State University — We conduct an experimental and numerical study of a nominally planar interaction of a normal shock with a layer of particles embedded in gas (air). Prior experimental studies reveal that even a particle layer with a modest volume fraction of particles (1-9%) produces a reflected pressure wave at Mach numbers above 1.4. The present work focuses on two aspects of the flow. First, we examine the transmitted pressure wave, using both experimental measurements and computational modeling, and seek to identify the influence of the system used to form the particle layer in experiments and any effects peculiar to the layer thickness. Second, we present a simple model describing perturbation growth in the gravity-driven particle layer before the shock arrival.

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Peter Vorobieff
University of New Mexico

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