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Formulation of experimental methods for measuring the shear strength of granular materials CHRISTOPHER COFFELT, LANL — In studies of the shock response of granular materials, multiple compaction models are available by which the pressure-density response of initially distended materials can be captured. These models are typically calibrated by one-dimensional shock compaction experiments, and by neglecting the strength of the underlying material, these pressure-density models can inaccurately capture the true densification response of shocked granular materials, while still matching experimental results in one-dimensional planar geometries. Using the multiphysics hydrocode FLAG, the impact of angled flyer plates of several materials into angled capsules containing thin layers of granular materials was simulated. Comparison of simulation with experiment provides confidence that the methods modeled in this investigation may be used to design future experiments that can help inform the interplay between pressure and shear driven compaction.

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