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Statistical Properties of Granular Solid to Liquid Transition in Small Systems under Shear MARTIN MELHUS, IGOR ARANSON, Argonne National Laboratory, DMITRY VOLFSO, LEV TSIMRING, University of California, San Diego — The fluidization transition of a dense granular assembly under shear is studied numerically using soft particle molecular dynamics simulations in two dimensions using a previously verified predictor-corrector algorithm. We focus on small systems in a thin Couette cell, examining the bistable region while increasing shear, with varied amounts of random noise, and determine the statistics of shear required for fluidization. We find an approximately linear relationship between noise and fluidization shear threshold over the transition regime, and that the variance in the threshold decreases as the system size increases.

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