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**Statistical Properties of Granular Solid to Liquid Transition in Small Systems under Shear** MARTIN MELHUS, Northwestern University, IGOR ARANSON, Argonne National Laboratory, DMITRY VOLFSO, University of California, San Diego, 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 varying amounts of random noise, and determine statistics of the shear required for fluidization. We find that variance in the fluidization transition increases with decreasing system size, and discuss their quantitative relationship.

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