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Power-Law Statistics in Jammed Disordered Solids[1] JACOB HASS, NATHAN KEIM, Cal Poly - San Luis Obispo — Simulations have shown that in many solid materials, rearrangements within the solid obey power-law statistics. A connection has been proposed between these statistics and the ability of a system to reach a limit cycle under cyclic driving. We study experimentally a 2D jammed solid that reaches a limit cycle under cyclic driving. Our solid consists of microscopic plastic beads adsorbed at an oil-water interface and cyclically sheared by a magnetically driven needle. We track 30,000 particles over 20,000 frames to identify rearrangements. By associating particles both spatially and temporally, we can measure the size of each rearrangement event. We present power-law like statistics within our solid when it is not driven, showing promise for power-law statistics with cyclic driving.

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