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Experimental measurement of an effective temperature for densely packed granular materials PING WANG, CHAOMING SONG, HERNAN MAKSE, Levich Institute and Physics Department of City College of New York — A densely packed granular system is an example of an out-of-equilibrium system in the jammed state. It has been a longstanding problem to determine whether this class of systems can be described by concepts arising from equilibrium statistical mechanics, such as an “effective temperature” and “compactivity.” The measurement of the effective temperature is realized in the laboratory by slowly shearing a closely-packed ensemble of spherical beads confined by an external pressure in a Couette geometry. All the probe particles, independent of their characteristic features, equilibrate at the same temperature, given by the packing density of the system.

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