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Granular dynamics in compaction and stress relaxation PING WANG, City College of New York, JASNA BRUJIC, Schlumberger Doll Research, CHAOMING SONG, City College of New York, DAVID JOHNSON, OLIVIER SINDT, Schlumberger Doll Research, HERNAN MAKSE, City College of New York, LEVICH INSTITUTE AND PHYSICS DEPARTMENT, CITY COLLEGE OF NEW YORK, NEW YORK, NY 10031 COLLABORATION, SCHLUMBERGER DOLL RESEARCH, OLD QUARRY ROAD, RIDGEFIELD, CT 06877 COLLABORATION — Elastic and dissipative properties of granular assemblies under uniaxial compression are studied both experimentally and by numerical simulations. Following a novel compaction procedure at varying oscillatory pressures, the stress response to a step- strain reveals an exponential relaxation followed by a slow logarithmic decay. Simulations indicate that the latter arises from the coupling between damping and collective grain motion predominantly through sliding. We characterize an analogous "glass transition" for packed grains, below which the system shows aging in time-dependent sliding correlation functions.

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