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Studies in a 2D granular pure shear experiment JIE ZHANG, Department of Physics and CNCS, Duke University, NC 27708, USA, PEIDONG YU, TRUSH MAJMUDAR, ROBERT P. BEHRINGER — We have performed two dimensional granular experiments under pure shear using bidisperse photo-elastic disks. Starting from a stress free state, a squre box filled with granular particles is subject to shear. The forward shear involved thirty steps, leading to maximum strain of 0.1. The network of force chains gradually built up as the strain increased, leading to increased pressure and shear stress. Backward shear was then applied to return the system to zero strain in the next thirty steps. Following each change of the system, contact forces of individual disks were measured by applying an inverse algorithm. We also kept track of the displacement and angle of rotation of every particle from frame to frame. We present the results for the contact forces, particle displacement, particle rotations, fabric, etc. Work supported by NSF grant DMR0555431.

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