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Shear Jamming for Slippery Granular Particles DONG WANG, JOSHUA DIJKSMAN, JIE REN[1], ROBERT BEHRINGER, Duke University — Shear Jamming of granular materials was first found for systems of frictional disks, with a static friction coefficients $\mu_s \simeq 0.6$. Jamming by shear is obtained by starting from a zero-stress state with a packing fraction $\phi_S \leq \phi \leq \phi_J$ between ϕ_J (isotropic jamming) and a lowest ϕ_S for shear jamming. This phenomenon is associated with strong anisotropy in stress and the contact network in the form of "force chains," which are stabilized and/or enhanced by the presence of friction. The issue that we address experimentally is how reducing friction affects shear jamming. We use either Teflon disks, or disks that have been wrapped with Teflon, lowering the friction coefficient substantially from previous experiments. The Teflon disks were placed in a 2D shear apparatus (Ren et al., PRL 110, 018302 (2013)), with two rows of uncoated photoelastic particles at the periphery. The interior Teflon particles formed the "system," and the outer ring of photoelastic particles provided force data. For Teflon disks, shear jamming was also observed, but the difference $\phi_J - \phi_S$ was smaller than for higher friction particles. Ongoing work is focused on studies using the Teflon-wrapped particles, which completely fill the apparatus.

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