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Mechanical Friction: Tuning the Janssen Pressure by Varying Particle and Wall Geometry YASIN KARIM, ERIC CORWIN, University of Oregon — Friction provides a way for granular materials to interact with other particles and the system boundaries. Friction mediated interactions can give rise to interesting properties like the Janssen effect, that are unique to granular materials. Using a conveyor belt we study friction-compacted 2D granular systems to explore the effects of changing particle geometries on the underlying physics of the system. As we have previously shown stick-slip motion due to sliding friction forces can relax away particle-wall friction. These tangential forces can be recovered by suitably changing the shape of the side-walls. We report on 2D gears as a model for high-friction granular particles for which tangential forces cannot be relaxed away by vibration. We use such particles to study the Janssen effect in systems with very high inter-particle friction.

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