

Abstract Submitted
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Rheological Transition of Sheared Frictionless Disks with Rotational Motion¹ PETER OLSSON, Ume University, STEVE TEITEL, University of Rochester — We consider the massive Durian bubble model for sheared bidisperse disks, but modified so as to include the rotational motion of particles due to dissipative collisional torques. In such a model, particles possess a viscous tangential dissipation, though no elastic tangential friction. As the packing fraction is increased, we find a discontinuous transition from Bagnoldian to Newtonian rheology, at a packing fraction that lies below the jamming transition. At this transition we find a region of coexisting shear bands of Bagnoldian and Newtonian rheology, and suggestions of discontinuous shear thickening upon increasing the shear strain rate.

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