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Jammed packings of bumpy spherical particles DOMINIC KWOK, Department of Physics, K. VIJAY KUMAR, Department of Mechanical Engineering & Materials Science and Physics, CARL SCHRECK, Department of Physics, COREY O'HERN, Department of Mechanical Engineering & Materials Science and Physics, Yale University, New Haven, CT 06511, MARK SHATTUCK, Benjamin Levich Institute and Physics Department, The City College of the City University of New York, NY 10031 — Static packings of soft frictionless spheres are a simple model to understand the jamming transition in granular media, and have provided great insight. However, friction in granular media plays an important role in determining the structural and mechanical properties of jammed packings. In particular, the number and location of contacts near the Coulomb sliding threshold is strongly correlated with plastic rearrangements. To better understand friction, we numerically generate jammed packings of bumpy spherical particles as a function of the rms roughness of the particles without incorporating *ad hoc* single contact frictional forces between particles, *i.e.* frictional contacts in the Hertz-Mindlin (HM) model. The frictional interactions in the bumpy particle model emerge in a natural way via the interdigitation of bumps between contacting particles. We calculate the number of contacts, packing fraction, interparticle forces, eigenmodes of the dynamical matrix, and mechanical properties of jammed packings of bumpy particles and compare our results with those obtained using the HM model.

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