Abstract Submitted
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Impact of loading geometry on steady-state flow of frictional granular packings-[1] JOEL CLEMMER, Sandia National Laboratories, ISHAN SRIVASTAVA, Lawrence Berkeley National Laboratory, JEREMY LECHMAN, GARY GREST, Sandia National Laboratories, SANDIA NATIONAL LABORATORIES TEAM — Studies of granular rheology often focus on a single loading geometry or stress state such as simple shear. However, different loading geometries or stress states such as triaxial extension or compression have different yield conditions and result in distinct flows. We explored this dependence using discrete element model simulations. Systems are deformed to large strains to reach steady-state flow using generalized Kraynik-Reinelt boundary conditions. Rheology is characterized for different constant bulk pressures, values of interparticle friction, strain rate, and loading geometries. Results are compared to common yield criteria such as the Mohr-Coulomb and Drucker Prager models. Additionally, we will discuss different methods of maintaining constant pressure in flow and compare results to constant volume simulations. Supported by the Laboratory Directed Research and Development program at Sandia National Laboratories, a multimission laboratory managed and operated by National Technology and Engineering Solutions of Sandia LLC, a wholly owned subsidiary of Honeywell International Inc. for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-NA0003525.

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