

Abstract Submitted
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Tuning Shear Jamming by Basal Assisted Couette Shear¹ YIQIU ZHAO, Department of Physics, Duke University, JONATHAN BARÉS, Laboratoire de Mécanique et Génie Civil, Université de Montpellier, ROBERT BEHRINGER, Department of Physics, Duke University — Granular matter with packing fraction $\phi_S < \phi < \phi_J$ can be jammed by applying shear strain. However, the stress-strain relation in shear jamming transition is not very well understood. Part of the difficulty is that the strain inside the granular system is very complicated and hard to control. In this work, by using a novel Couette shear apparatus capable of generating arbitrary shear profiles, we study the stress-strain relation during shear jamming transition for granular system under different kinds of controlled interior strain. The novel Couette shear apparatus consists of 21 independently movable rings and two circular boundaries. The apparatus can shear the granular sample not only from the boundaries but also from the bottom. The granular sample is made of about 2000 bi-disperse photo elastic disks, making it possible to extract force information.

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