

Abstract Submitted
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Mechanical Response in Particulate Media NIRANJAN WARNAKULASOORIYA, LEO SILBERT, Department of Physics, Southern Illinois University Carbondale, 62901, USA — We study the mechanical behavior of granular particle system in two dimensions in response to a dynamical intruder using computer simulations. We created mechanically stable granular packings of bidisperse discs with various coefficients of friction spanning several orders of magnitude and packing fractions in the vicinity above the critical packing fraction ϕ_c . For each packing, we find the critical force F_c , the minimum force required to induce motion of a probe particle that we are trying to drag through the packing. Below the critical force the probe particle does not sustain continued motion. Just at the critical force, the probe particle moves through the system strongly intermittently. When the force is slightly larger than the F_c , the probe moves with well-defined average velocity. We find how the critical force and the average probe velocity depend on the packing pressure and particle frictions.

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