

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Digging Like Plants: Flexible Intruders in Granular Materials DAWN WENDELL, KATHARINE LUGINBUHL, MIT, DIEGO SOLANO, Northeastern University, PEKO HOSOI, MIT — Inspired by plant root growth in granular media, we report on the effects of flexibility on the mechanical work required to dig through granular systems. In the case where the digger is significantly thinner than the grain diameter, increased flexibility in one-dimension leads to savings of nearly 50%. A simple numerical model based solely on the variability of forces in the granular substrate and the flexibility of the digger gives similar results to those observed in experiments.

Dawn Wendell
MIT

Date submitted: 08 Nov 2011

Electronic form version 1.4