A Nondimensional Model for Axial Digging in Granular Materials HAO LI, DAWN WENDELL, ANETTE HOSOI, PAWEL ZIMOCH, MIT — We investigate the mechanics of thin diggers in a packing of granular materials. Experiments are conducted with diggers of varying thickness and force-depth data is recorded. Accounting for buckling and drag force, we propose a continuum model thats predicts an optimal digger thickness that maximizes digging depth. Model predictions are compared to experimental data. This model is refined when digger thickness approaches the grain scale to account for stochasticity.

Annette Hosoi
MIT

Electronic form version 1.4