Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Increasing Digging Efficiency Using Two Biologically-Inspired Techniques[1] DAWN WENDELL, PEKO HOSOI, MIT — The mechanics of digging through granular materials often neglect the inhomogeneities present in granular packings. This work reports on two biologically-inspired mechanisms that aim to increase the efficiency of digging through granular materials by taking advantage of the variety of forces found in granular packings. First, flexible diggers demonstrate that a slight increase in flexibility can lead to more efficient digging using a completely passive mechanism. Secondly, a digger with an actuated tip is investigated to find optimum parameters for energy efficient digging with actuated mechanisms.

[1]This work is funded by Schlumberger-Doll Research.

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Date submitted: 16 Nov 2010 Electronic form version 1.4