

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

An effective field theory for soft granular matter¹ SILKE HENKES, Brandeis University, COREY O'HERN, Yale University, BULBUL CHAKRABORTY, Brandeis University — Work on packings of soft spheres (PRE **68**, 011306 (2003)) has demonstrated the existence of a jamming transition and has highlighted the need for a general statistical framework to describe granular packings. We have shown that a statistical ensemble, based on conservation properties of the global stress tensor, is consistent with simulated packings of frictionless disks (PRL **99**, 038002 (2007)). We construct an effective field theory based on this ensemble, in the spirit of an earlier attempt (PRL **95**, 198002 (2005)). The field theory is constructed by synthesizing results from simulations into one functional form for the effective free energy. We will describe ongoing efforts to derive this form by combining scaling ideas with microscopic properties of the packings.

¹Work supported by NSF-DMR 0549762

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Date submitted: 26 Nov 2007

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