

Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Theory of random packings HERNAN MAKSE, City College of New York, CHAOMING SONG, PING WANG — We present a theory of random packings to describe the statistical mechanics of jammed matter with the aim of shedding light to the long-standing problem of characterizing the random close packing (RCP) and random loose packing (RLP) of particles. We describe the jammed system with equations of state relating observables such as entropy, coordination number, volume fraction, and compactivity as well as the probability distributions of volume and contacts. We follow a systematic route to classify packings into a phase diagram of jamming, from frictionless to frictional particles, from hard to deformable particles, from monodisperse to polydisperse systems, from spherical particles to nonspherical convex particles, in an attempt to understand the packing problem from a unifying perspective. The studies of RCP and RLP includes 2d, nd, and the mean field limit of infinite dimension.

Hernan Makse
City College of New York

Date submitted: 21 Nov 2008

Electronic form version 1.4