

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Glass Transition and Random Close Packing above Three Dimensions¹ PATRICK CHARBONNEAU, Duke University, ATSUSHI IKEDA, Universite Montpellier 2, GIORGIO PARISI, Sapienza Universita di Roma, FRANCESCO ZAMPONI, Ecole Normale Superieure — Motivated by a recently identified severe discrepancy between a static and a dynamic theory of glasses, we numerically investigate the behavior of dense hard spheres in spatial dimensions 3 to 12. Our results are consistent with the static replica theory, but disagree with the dynamic mode-coupling theory, indicating that key ingredients of high-dimensional physics are missing from the latter. We also obtain numerical estimates of the random close packing density, which provides new insights into the mathematical problem of packing spheres in large dimension.

¹NSF Support No. DMR-1055586

Patrick Charbonneau
Duke University

Date submitted: 01 Nov 2011

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