

Growing correlations and signature of a thermodynamic phase transition at unjamming of sphere packings

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An outstanding question in the physics of jammed packings concerns the nature of the correlations that arise near the unjamming transition. In this talk, I will present recent results on unjamming in an assembly of frictionless grains that are hard but not innitely rigid. I will show that a static correlation function, which probes sensitivity to boundary conditions, exhibits a diverging correlation length as the packing is decompressed. I will present an analytic expression for the length scale divergence, obtained from a scaling relation of the entropy, and show that there are logarithmic corrections to mean-eld results.