Abstract Submitted
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Energy Transport of Jammed Systems[1] NING XU, University of Pennsylvania and University of Chicago, VINCENZO VITELLI, University of Pennsylvania, MATTHIEU WYART, Harvard University, ANDREA LIU, University of Pennsylvania, SIDNEY NAGEL, University of Chicago — We performed computer simulations to calculate the thermal diffusivity of vibrational modes in jammed sphere packings near the jamming transition (Point J). The diffusivity $d(\omega)$ is low for all modes, including those at low frequency ω, and appears to be finite in the zero frequency limit. In ordinary solids, by contrast, $d(\omega)$ diverges at low frequencies due to long wavelength plane waves. The low- frequency modes near Point J are very different from plane waves: they are quasi-localized with large anharmonic corrections. Thus, these modes, which can be viewed as harmonic precursors to two-level systems, are poor conductors of energy.

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