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Density of vibrational modes in partially crystalline granular packings[1] THIBAULT BERTRAND, Yale University, Dpt of Mechanical Engineering, CARL F. SCHRECK, Yale University, Dpt of Physics, MARK SHATTUCK, Benjamin Levich Institute and Physics Department, The City College of the City University of New York, COREY S. O'HERN, Yale University, Dpt of Mechanical Engineering, O'HERN GROUP, YALE UNIVERSITY TEAM — Numerous numerical results have shown that systems of monodisperse frictionless disks crystallize readily and that disordered mechanically stable packings are rarely obtained. We numerically investigate the dependence of the cluster size distribution on system size and quench rate. We also investigate the effect of crystallization on the vibrational response outside the linear response regime. We study changes in the density of vibrational modes due to changes in the average crystallite size and perturbation amplitude in partially crystalline granular packings. In particular we determine how the number of contacts (above the isostatic value) affects anharmonic response in granular packings.

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