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Influence of the microstructure on jammed packings of spheres
ERIC CORWIN, MAXIME CLUSEL, ALEXANDER SIEMENS, JASNA BRUJIC, New York University — Jammed matter is by definition impenetrable to light, such that little is known about the geometry of jammed systems. Using confocal microscopy to image an emulsion in 3D, we use the enhanced fluorescence at the droplet contacts to determine the contact network inside this model frictionless system. This enables the experimental determination of the average coordination number $< Z >$, which agrees with the isostatic predicted value of $< Z > \simeq 6$ [1]. Furthermore, we measure the distribution of coordination numbers within the jammed packings close to the isostatic limit. We show that the distribution of sizes of the droplets strongly influences the coordination number distribution, as well as the volume fraction at which the system becomes jammed. This may have important consequences on the stress propagation properties of the material as a whole. [1] J. Brujić *et al.*, Phys. Rev. Lett. 98, 248001 (2007)

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