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New order metric for 3D packings ZHUSONG LI, CUNY-CCNY, COREY S. O'HERN, Yale University, MARK D. SHATTUCK, CUNY-CCNY — Characterization of the structure of static granular packings is important in both theory and applications. For example, it is often useful to assign a value to the degree of structural order in a system. However, most current order metrics assume a particular symmetry for the ordered structure. For systems composed of monodisperse spheres, it is known that the face-centered cubic (FCC) structure is the most ordered. Thus, order metrics that quantify icosahedral order are often selected for studies of monodisperse spheres. However, what order metrics should be used for bi-disperse system with arbitrary size ratio and mixture fraction that do not possess strong icosahedral order? We propose using the Shannon entropy that counts the number of distinct local geometric structures (e.g Voronoi polyhedra) as a measure of generic order. Using this new order metric, we find that we can distinguish order in systems where other metrics fail.

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