

Elementary volumes and forces in equilibrium statistical mechanics descriptions of granular media

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Volumes and force networks have been used to build statistical descriptions of granular media. In this talk we will discuss how both descriptions can be based on statistically independent elementary units, either volumes or forces, and how they can predict the distributions of Voronoi volumes and pressures per grain observed in both experiments and simulations for the special case of isotropic random arrays of monodisperse grains. Furthermore, we approximate how to join both descriptions and maximize total entropy to obtain from first principles an equation of state relating pressures and forces for this granular medium. Those results are further steps to modelling granular media from equilibrium statistical mechanics.

