Anisotropy and coordination number for a granular assembly

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We propose a simple model to characterize the initial state of a transversely isotropic laboratory specimen of a granular material. Given the confining pressure and the porosity, we determine the coordination number (the average number of contacts per particle) and the strength of the inherent anisotropy of the aggregate from the knowledge of the overall elastic moduli. The idea is based upon a possible equivalence between an ideal isotropic aggregate and the real anisotropic specimen that have in common the coordination number, the confining pressure and the solid volume fraction.

keyword

Anisotropy, Constitutive relation, Granular material, Stress waves, Micromechanics