



Sand compaction by weak fluidization

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How to arrange a packing of spheres is a scientific question that aroused many fundamental works since a long time from Kepler's conjecture to Edward's theory [1] (where the role traditionally played by the energy in statistical problems is replaced by the volume for athermal grains.

Since then, many experimental works have been conducted to study the compactivity of dry assembly of spheres (*e.g.* [2,3]). Though very few studies have deal with immersed granular materials, they reported a different behavior from the dried case. Two different mechanisms of compaction have been reported for immersed shacked beads pile [3] while the compaction is more efficient when the material is sheared and not vibrated [4].

In a recent study we showed that the compaction is even faster when a beads pile is subjected to a discontinuous low Reynolds number upward flow [5]. The aim of the internship / PhD Thesis, is to study the mechanism of compaction in this situation. During the internship, the student will study the influence of the flow parameters on the compaction efficiency. In a second time, the study of the motion of marked beads (using index matching technics) during the compaction process will give hints of the compaction mechanism.

References :

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