Service Interdisciplinaire sur les Systèmes Moléculaires et Matériaux
SÉMINAIRE

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Vendredi 24 septembre 11h00

CEA-Saclay ¡b¿¡font color =’red’¿SIS2M¡/font¿¡/b¿ Bât 125, pièce 157

Terminal velocity of a heavy object in a superlight granular medium

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A granular material is a system composed of many solid particles interacting mainly through contact forces. Therefore, the dissipation of energy usually plays a dominant role in the dynamics of these materials. For this reason, in experiments done so far, when an object impacts on a granular bed it eventually dissipates all its energy and comes to rest. In contrast, when a dense enough object is placed inside a fluid it keeps falling, asymptotically approaching a terminal velocity. Here we present experiments of a heavy object falling into a silo full of expanded polystyrene spherical particles. The density of the granular medium is so low that it can not bear the weight of an intruder whose mass is beyond a threshold value, even if the object is very deep in the silo. We systematically vary the mass of an object impacting in such a granular bed and we find a transition between the commonly observed behavior where the object stops at a given depth, and a situation where the object keeps falling and reaches a terminal velocity, just as in a fluid.

Le cafe sera servi 10 minutes avant
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