Recent Advances in the Behavior of Granular Materials

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Abstract

The understanding of the behavior of granular materials has known considerable progress in the last years, due to the use of advanced and more and more sophisticated experimental tools (tomographic techniques, advanced tribology techniques ...), in order to feed constitutive models developed in different frameworks (discrete element models, elasto-plasticity, hypoplasticity, thermodynamics, ...). A general feature consists in crossing the scales, micro or local scale at the grain level to the macro or global at the assembly level and in introducing coupling effects (mechanics, chemistry, temperature, hydraulics, ...). Both experimental tools and numerical modelling aim to better take into account physical mechanisms considered as of a second-order contribution until now, such as time dependency of the behavior of granular media, degradation of particles (breakage, abrasion, attrition, dissolution/precipitation) under complex and usually coupled environmental and mechanical conditions. The goal of this mini-symposium will therefore be to illustrate recent advances in the behavior of granular materials and to highlight the opportunity to gather different approaches (physics, mechanics, experimental/numerical, ...).

Keywords: Granular materials, modelling, experiments

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