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Influence of the initial volume fraction on the collapse of submerged granular columns ANOUK RIFFARD, MILTIADIS PAPALEXANDRIS, Universite catholique de Louvain — Gravity-driven flows of granular materials are encountered in numerous natural phenomena such as debris flows and landslides, as well as in various processes in the chemical, food and pharmaceutical industries. In this presentation, we present simulations of the collapse of a granular column, submerged in water, under its own weight. Our study is based on a two-velocity, two-pressure Eulerian model that takes into account compaction, dilatancy and the complex rheological behavior of the granular phase. This model is treated numerically using a predictor-corrector time-integration scheme, coupled with a projection method for the computation of phasial pressures. In the simulation presented herein, emphasis is placed on the different behaviours that are observed depending on whether the initial packing is loose or dense, exhibiting contractancy or dilatancy respectively. The role of the ambient fluid is also highlighted by a comparison between dry and submerged columns.

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