MODELLING FLUIDISATION AND SEDIMENTATION USING MATERIAL POINT METHOD

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ABSTRACT

Fluidisation and sedimentation processes occur in the contact zone between soil and free water, where a transition between free water and soil skeleton occurs. In order to numerically model these phenomena the material point method (MPM) is used. In this study, a formulation of the material point method [1,2] is exploited, which uses two sets of material points for soil and water respectively. In such way, not only the soil-water interaction can be described, such as the accumulation and dissipation of excess pore pressures, but also the transition from free water to groundwater as well as fluid-like behaviour of soil typical for fluidisation and sedimentation problems can be simulated. In this paper, examples of a collapsing submerged sand column are presented.

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