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NUMERICAL MODELLING OF THE INTERNAL EROSION PROCESS IN GRANULAR SOILS USING THE MATERIAL POINT METHOD

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Abstract. Civil engineering accidents are usually attributed to structural failures in soil masses. Although collapses are generally multi-causal, when the porous medium is subjected to hydrodynamic loads, one of the main cause of collapse, or failure initiation, is the scour process that the medium undergoes. On the other hand, due to the intrinsic characteristics of the scour phenomenon, the use of purely Lagrangian numerical techniques leads to problems of a numerical-computational nature. In this sense, one of the most widely used methods for modelling extreme deformation problems in granular media is the Material Point Method (MPM). This paper presents a theoretical/numerical approach to aboard with internal scour problem using the MPM in order to overcome problems of mesh dependence with extreme deformations.