Master Thesis in Computational Geomechanics

14 April 2010

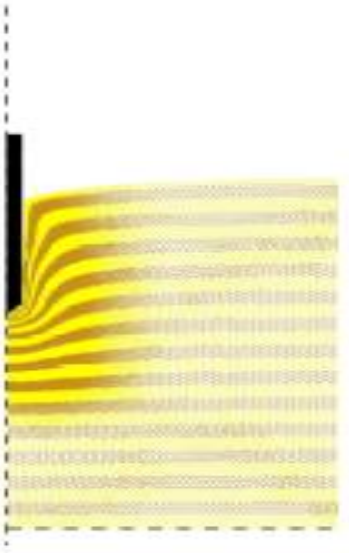
In geomechanics, various processes like landslides or the installation of piles involve large deformations of soil. Obtaining reliable predictions of such deformation processes is the subject of numerous research efforts worldwide. Although numerical methods (such as the FEM) are nowadays commonly applied to engineering problems, numerical simulations are still cumbersome in the case of very large deformations.

In the frame of an EU sponsored research project, a mesh-free method called the Material Point Method (MPM) is being developed at Deltares in Delft together with Universities in Stuttgart, Stellenbosch and Glasgow, for the analysis of both dynamic and quasi-static large-strain problems. At Deltares, a team of three PhD students and experienced scientists are working on the MPM.

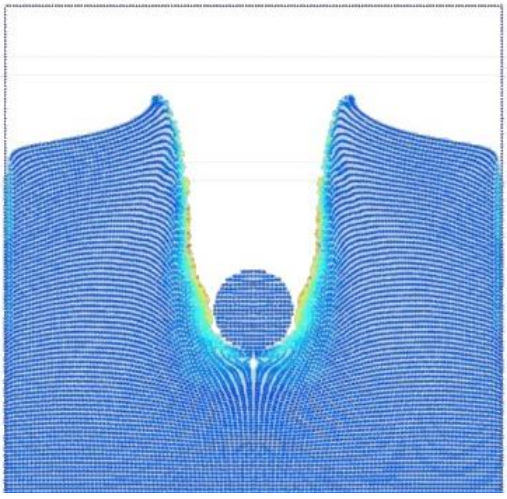
The Material Point Method uses two discretisations of space, a finite element mesh and a cloud of points (called material points) that represents a body placed inside the mesh. In the course of a calculation, material points move through the fixed finite element mesh, thereby modelling the deformation of the body.

The master student will work on the numerical simulation of pile driving. Being part of a R&D team, good assistance will be provided. The student will work at Deltares. A financial compensation will be provided.

Applicants should be familiar with the Finite Element Method and possess basic programming skills.



Simulation of pile jacked into soil



Simulation of sphere being shot into soil

For further information please contact:

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