

MPM Training Course

Modelling large deformation and soil–water interaction using the Material Point Method

Date

3 May 2016

Location

University of Cambridge, Engineering Dept.
Trumpington Street, Cambridge CB2 1PZ

Speakers

Prof. Kenichi Soga, Dr. Dongfang Liang,
Dr. Mario Martinelli, Dr. Francesca Ceccato,
Dr. Alexander Rohe, Dr. Alba Yerro

Registration Fee

75 £ (includes: coffee, lunch, and tutorials)

Registration form

www.mpm-dredge.eu/course

Registration deadline

29 April 2016

Number of participants

Limited to 20

Additional information

jf368@cam.ac.uk – Jen Flack



This training course is especially intended for PhD students and researchers interested in modelling large deformations and soil-water interaction problems using the Material Point Method



The course includes lectures on theory and practical sessions

MPM Training Course

Modelling large deformation and soil-water interaction using the Material Point Method

3 May 2016, Cambridge



MPM Research Community

Modelling large deformation and soil–water–structure interaction



MPM-DREDGE
PIAP-GA-2012-324522



Soil–water interaction

Soil–water interaction exists in many environmental and civil engineering problems, such as landslides induced by rainfall, fluidisation and sedimentation processes in submerged slopes, internal erosion in dykes, scouring around offshore structures, settlement due to consolidation processes and installation of piles in saturated soils. Modelling these processes is challenging due to soil–water coupling and large deformation.

MPM is a point-based numerical method capable of modelling large deformations and recently, within the framework of the MPM Research Community, it has been extended to cope with complicated soil–fluid interactions.

This training course focuses on presenting those MPM formulations capable of simulating the interaction between soil and water phases. Two different approaches will be addressed. In the first one, a single set of material points describes the behaviour of saturated porous media understood as a mixture of solid skeleton and pore fluid. The second approach describes the movement of each constituent (i.e. solid and fluid) individually by means of two sets of material points, thereby enabling the simulation of free water and the in- and outflow, as well as fluidisation and sedimentation processes.

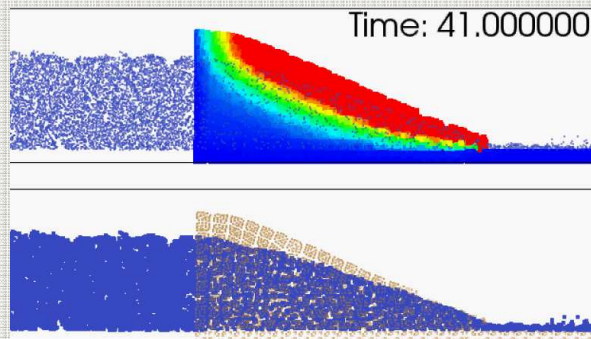


Tutored exercises

Course participants will gain experience as users of the MPM Software developed by the MPM Research Community.

During training lectures, the attendees will learn first-hand capabilities of MPM by means of a set of practical exercises that will be undertaken following a tutorial specially designed for the course:

- Dynamic consolidation problem
- Dam break problem
- Seepage flow inducing slope liquefaction



Programme

8:30 – 9:00	Registration
9:00 – 9:15	Opening
9:15 – 10:30	Theory
10:30 – 11:00	Break
11:00 – 12:30	Training
12:30 – 13:30	Lunch
13:30 – 15:00	Training
15:00 – 15:30	Break
15:30 – 16:30	Other applications
16:30 – 17:00	Final discussion

Availability of computers

A maximum of 15 computers will be available.

MPM-DREDGE Project

MPM-DREDGE is an Industry–Academia Partnerships and Pathways (IAPP) project funded from the Seventh Framework Programme (FP7/2007-2013) of the European Commission during 2013–2017 under Grant Agreement PIAP-GA-2012-324522

