UNIVERSITÀ DI PAVIA
Dipartimento di
Ingegneria Civile
e Architettura

3rd Piola Lecture

PhD Program in Design, Modeling, and Simulation in Engineering

ADVANCES ON THE COUPLING OF PARTICLE-BASED METHODS AND THE FEM FOR ANALYSIS OF COUPLED PROBLEMS IN ENGINEERING

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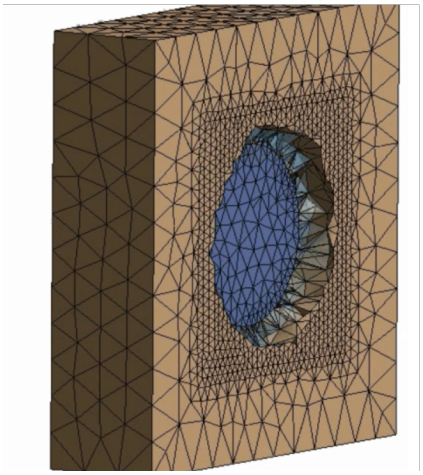
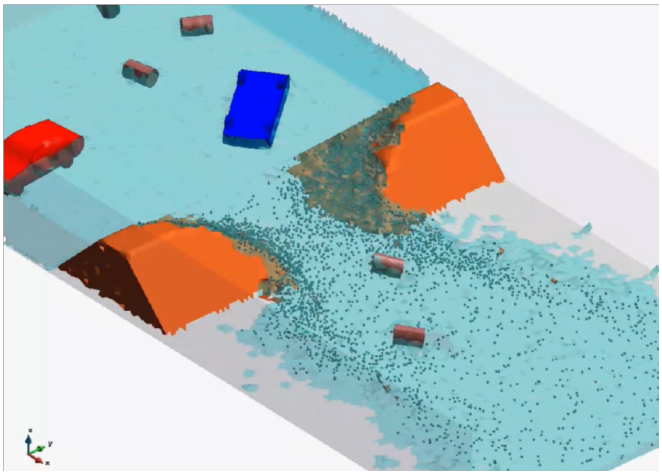
Abstract

The lecture presents recent developments in the coupling of the finite element method (FEM) with particle-based methods such as the Discrete Element Method (DEM, www.cimne.com/dempack) and the Particle Finite Element Method (PFEM, www.cimne.com/pfem) for analysis of multidisciplinary problems in engineering involving particulate flows and their interaction with solids and structures.

We present examples of application of the so-called coupled PDFEM procedure to civil and environmental engineering problems, such as the effect of waves, extreme water hazards and landslides on constructions, river beds, slopes and earth dams accounting for fluid-soil-structure interaction situations. Other applications of the PDFEM include excavation and drilling problems in the tunneling and oil/gas industries, the burning and melting of objects in fire and industrial forming problems, among others.





March 7th, 2019 – 4:00 pm (sharp)

Aula Foscolo, University of Pavia