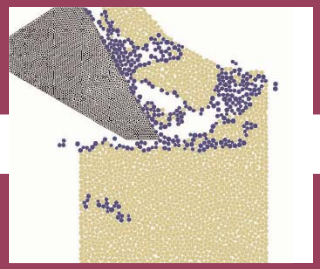
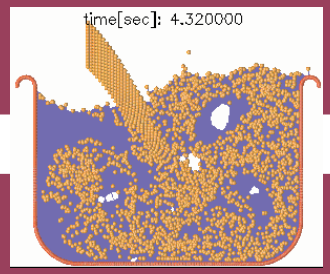
Registration Fees

The course fee is 550€. The fee includes lecture notes, coffees, welcome and farewell coktails.

Grants: A limited number of grants covering 50% of the course fee are available. Interested participants are requested to contact the Course Secretariat.





REGISTRATION MUST BE PERFORMED
ELECTRONICALLY VIA THE COURSE WEB SITE:
http://congress.cimne.upc.es/particle-basedmethods

Course premises

The Course will take place at CIMNE Conference Room, Universitat Politècnica de Catalunya, Edificio C1, Campus Norte UPC, Gran Capitán s/n, 08034 Barcelona, Spain

Secretariat:

International Center for Numerical Methods in Engineering (CIMNE)
Edificio C-1, Campus Norte UPC
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Tel: +34 93 401 74 41 Fax: +34 93 401 65 17
E-Mail: particle-basedmethods@cimne.upc.edu
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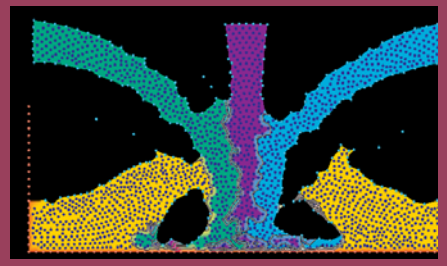
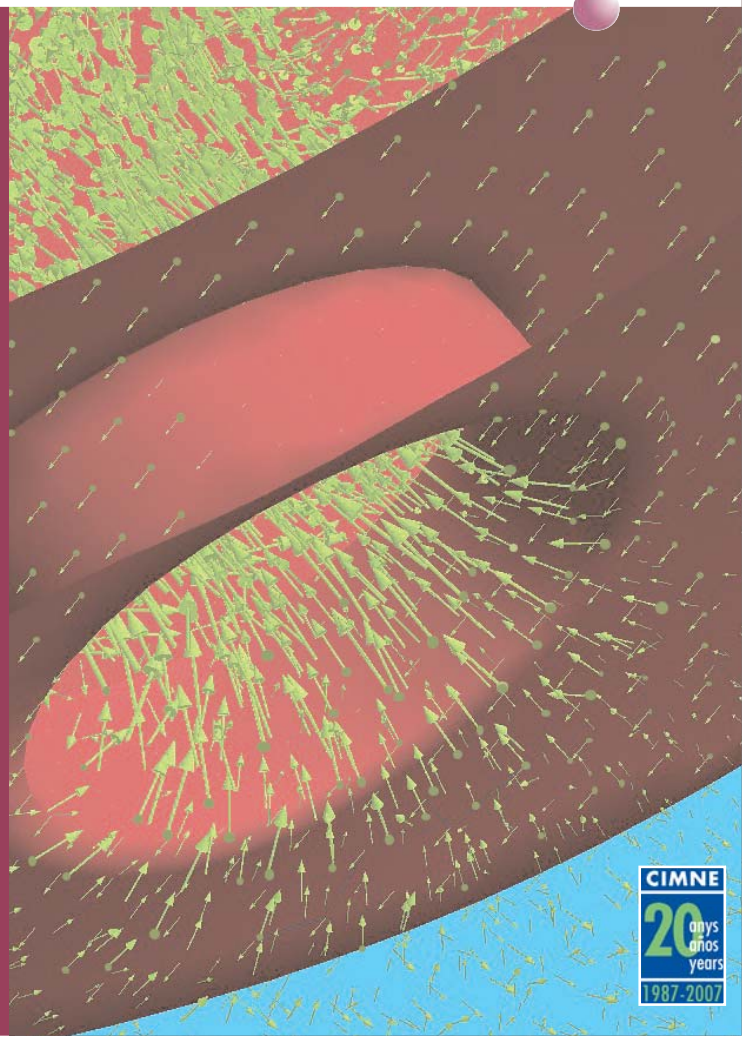


Short Course on Particle-Based Methods

Fundamentals and Applications

14-16 May 2008, Barcelona, Spain



Short Course on Particle-Based Methods

14-16 May 2008, Barcelona, Spain

Objectives

The objective of the course is to present the fundamental basis and the applicability of a number of particle based computational methods that can be effectively used for solving a variety of problems in engineering and applied sciences.
The methods to be described in the course include the discrete element method (DEM) the smooth particle hydrodynamic method (SPH) and the particle finite element method (PFEM). The coupling of these methods with standard numerical procedures such as the finite element methods (FEM) and also with meshless techniques will be emphazised. The applications particle-based of the methods presented in the course cover the analysis of **geomechanical** and **mining** problems, **metal forming** processes, **fluid-structure interaction** problems accounting for free surface flow effects (effect of water streams in constructions, wave loads in harbours and marine structures, ship hydrodinamics, etc.), nano-micro-macroscopic effects in **material science** and **biomedical engineering,** simulation of cell mobility and melting polymers in fire situations and many others.

Course lecturers

J. Bonet, Swansea University, UK
Y. Feng, Swansea University, UK
S.R. Idelsohn, CIMNE, Barcelona, Spain
W.K. Liu, Northwestern University, USA
X. Oliver, Universitat Politécnica de Catalunya, Spain
E. Oñate, Universitat Politécnica de Catalunya, Spain
D.R.J. Owen, Swansea University, Swansea, UK
J. Rojek, Institute for Fundamental Technological Research, and CIMNE
P. Wriggers, Universität Hannover, Germany

Course Programme

Day 1, Wednesday May 14th

13:00-14:00	Registration of participants
14:00	**Welcome address**
14:15	**Discrete Element Methods (DEM) Fundamentals and Applications 1** *R. Owen, Y. Feng*
16:00	Coffee Break
16:30	**Discrete Element Methods (DEM) Fundamentals and Applications 2** *R. Owen, Y. Feng*
19:00	Course Reception

Day 2, Thursday May 15th

8:30	**DEM for Granular Materials,** *P. Wriggers*
10:30	Coffee Break
11:00	**Coupling of DEM with FEM. Theory and Applications**, *J. Rojek*
13:00	Lunch
14:00	**Smooth Particle Hydrodynamics. Fundamentals and applications**, *J. Bonet*
16:00	Coffee Break
16:30	**Multiscale, Multiresolution Theory for Simulating Mechanical Response in Terms of the Underlying Heterogeneous Microstructure** *W.K. Liu*
19:30	End of day 2

Day 3, Friday May 16th

8:30	**The Particle Finite Element Method (PFEM),** *E. Oñate*
10:00	Coffee Break
10:30	**The PFEM for Fluid-Structure Interaction Problems**, *S. Idelsohn*
12:30	**Possibilities of PFEM in Material Forming Processes,** *X. Oliver*
14:00	Lunch
15:00	**PFEM. Applications in Civil and Marine Engineering**, *E. Oñate*
16:30	**Round Table on Perspectives of Particle-based Methods**
17:00	Course closure. Farewell Cocktail