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US-France Workshop 2013

Aussois, France, 22-24 may

Wednesday 22nd of may 2013

Physics and mechanics of mean-stress dependent materials

Morning Session

8:00 – 8:30 Opening

8:30 - 9:15 A Plasticity Model for Metals with Dependency on all the Stress Invariants
G.Z. Voyiadjis[*], S. H. Hoseini, G. H. Farrahi ([*]Louisiana State Univ.)

9:15 – 9:45 The influence of single crystal plastic deformation mechanisms on damage distribution in porous materials
O. Cazacu[*], B. Revil-Baudard ([*]Univ. of Florida, REEF)

9:45 – 10:15 Effects of Some External Parameters on the Behavior of a Passive Safety Concept Made from Several Metallic Materials
A. Abdul-Latif (Univ. Paris 8 – LISMMA)

Coffe Break

10: 45 – 11:30 A New approach for the change of scale in granular materials
B. Cambou[*], S. K. Nguyen, E. Vincens, H. Magoariec (Ecole Centrale Lyon - LTDS)

11:30 -12:00 A Continuum Model for Deformable, Second Gradient Porous Media Partially Saturated with Compressible Fluids
A. Madeo[*], F. dell'Isola, F. Darve ([*]INSA Lyon - LOCIE)

12:00 – 12:30 What is "mean stress" in three phase granular materials?
B. Chareyre[*], L. Scholtès ([*]Grenoble INP – 3SR)

Lunch

Afternoon session

14:00 – 14:45 Micromechanics of mean-stress dependent polycrystalline materials
R.A. Lebensohn[*], O. Cazacu, P.P. Castañeda ([*]Los Alamos Nat. Lab)

14:45 – 15:15 A homogenization Mori-Tanaka scheme for elastic-viscoplastic heterogeneous materials based on «Translated Fields»: applications to linear and non linear two-phase composites
S. Berbenni (Univ. Lorraine – LEM3)

Break

15:45 – 16:30 Multi-scale Characterization of Constitutive Behavior of Silica Sand
K.A. Alshibli[*], M.B. Cil, A.M. Druckrey (*University of Tennessee, Knoxville)

16:30 – 17:00 Effects of Multiscale Heterogeneity on Transport
A. Cortis (ION Geophysical Corporation)

Thursday 23rd of may 2013

Mathematical and numerical modeling of mean-stress dependent material

Morning session

8:30 – 9:15 Granular plastic flow and fabric-based internal variables
F. Radjai*, S. Roux (Univ. Montpellier 2 - LMGC)

9:15 – 9:45 Lattice Boltzmann simulation of capillary regimes in a granular material
J.Y. Delenne*, V. Richefeu, F. Radjai (*CIRAD, LMGC – Montpellier)

9:45 – 10:15 Experimental micromechanics of 2D granular materials
G. Combe (Univ. Grenoble I – 3SR)

Break

10:45 – 11: 30 Micromechanically-based analysis of failure in geomaterials
F. Nicot, N. Hadda, F. Bourrier, L. Sibille, F. Darve (IRSTEA – Grenoble)*

11:30 – 12:00 Discrete modelling of failure in granular materials
L. Sibille, N. Hadda, F. Nicot, F. Darve, A. Tordesillas, L. Scholtès, P.Y. Hicher (*LUNAM Univ. - GeM, Nantes)*

12:00 – 12:30 A polycrystalline approach for plastic and viscoplastic behaviors of cohesive geomaterials
T. Zeng, J.F. Shao (Polytech Lille -*Lab. of Mechanics of Lille)*

Lunch

Afternoon session

14:00 – 14:45 Decoding the mechanics and physics of granular avalanches: combined experiments and simulations across scales
J.E. Andrade, E. Marteau, G. Ravichandran, C. Avila, (*California Institute of Technology)*

14:45 – 15:15 Discrete modelling of rock avalanches
G. Mollon, P. Villard, V. Richefeu, D. Daudon (*Univ. Grenoble I – 3SR)*

15:15 – 16:00 Impact of Fabric on Low- and Large Strain Response of Granular Soils
M. Zeghal, C. Tsigginos (*Rensselaer Polytechnic Institute,Troy)*

Break

16:30 – 17:15 Multiscale analysis : experimental and numerical advances
J.Desrues, E.Andò, T.K. Nguyen (CNRS – 3SR Grenoble)*

17:15 – 17:45 Micromechanical Modelling for the delayed strains in concrete
F. Grondin, M. Matallah, J. Saliba, A. Loukili (*LUNAM Univ. - GeM, Nantes)*

Friday 14th of may 2013
Applications to natural media & risks

8:30 – 9:15 How seismic waves can be used to constrain landslide dynamics and rheology
A. Mangeney[*], E. Stutzmann, Y. Capdeville, L. Moretti, F. Bouchut, C. Hibert, G. Grandjean, N. Shapiro. ([*]IPG Paris)

9:15 – 9:45 DEM modeling of progressive failure in jointed rock slopes
L. Scholtès[*], F.V. Donze ([*]Univ. Lorraine – Lab. GéoRessources)

9:45 – 10:15 Strength of fractured rock masses using a DEM-DFN model
B. Hartong, L. Scholtès, F.V. Donzé[*]. Univ. (Grenoble 1 – 3SR)

Break

10:45 – 11:30 The Triggering of Flow Slides Induced by Pore Pressure Increase
G. Buscarnera (Northwestern Univ.)

11:30 – 12:00 The role of the density on the diffuse instability of cohesionless granular materials
A. Daouadji[*], M. Jrad, B. Sukumaran, F. Darve, (Université de Lorraine - LEM3)

12 :00 – 12 :30 Numerical modelling in a unique framework of landslides: initiation, runout with obstacles and final deposit
F. Dufour[*], N. Prime, F. Darve. ([*]Grenoble INP – 3SR)

Lunch

Afternoon Session

14:00 – 14:45 Role of pore pressure gradients in geophysical flows over permeable substrates
M. Louge[*], B. Turnbull, A. Valance, A.O. El-Moctar. ([*]Cornell Univ.)

14:45 – 15:15 A micromechanical approach to the understanding of sudden levee failure during a flood
S. Bonelli (IRSTEA – Aix en Provence)

15:15 – 15:45 Liquefaction around coastal structure: role of soil gas content
H. Michallet (CNRS – LEGI, Grenoble)

Break

16:15 – 16:45 Dense avalanche friction coefficients: influence of physical properties of snow
M. Naaim[*], Y. Durand, N. Eckert, G. Chambon. ([*]IRSTEA – Grenoble)

16:45 – 17:15 Mechanical behavior of rock joints and stability of rock slopes
J. Duriez[*], F. Darve, F.V. Donzé. (Ecole Centrale de Lyon - LTDS)

17 :15 – 17 :45 Closure