ALERT GEOMATERIALS

The Alliance of Laboratories in Europe for Education, Research and Technology
http://alertgeomaterials.eu/

28th ALERT Workshop and School

Aussois, 2nd October to 7th October 2017

Preliminary Programme

(September 13, 2017)

28th ALERT Workshop Program

Aussois, 2nd October 2017

Session I: Porous Media Mechanics from geomaterials to non-geological media

Coordinators: William G. Gray (University of North Carolina, Chapel Hill and University of Vermont, Burlington, USA), Bernhard Schrefler (Università degli Studi di Padova, Italy), Claudio Tamagnini (University of Perugia, Italy)

8:20 - 8:30 **Opening of the 28th ALERT Workshop**
Manuel Pastor (Universidad Politécnica de Madrid, Spain), President of ALERT

8:30 - 8:45 **Session opening**
William G. Gray, Bernhard Schrefler, Claudio Tamagnini

8:45 - 9:30 **Keynote Lecture**
A multiphase porous media model for vascular tumor growth and drug delivery
Bernhard Schrefler (Università degli Studi di Padova, Italy)

9:30 - 10:00 A hierarchical multi-compartment porous medium system for evolution of tumor microenvironment during avascular and vascular growth
G. Sciumé (University of Bordeaux, France)

10:00 - 10:20 **COFFEE BREAK**

10:20 - 11:05 **Keynote Lecture**
Toward the Closure of a New Generation of Multiphase Flow Models
Cass T. Miller, J.E. McLure, W.G. Gray (University of North Carolina, USA)

11:05 - 11:35 Micromechanical μ-UNSAT expression of a stress-(quasi-elastic)strain-strength effective stress in dry and wet porous media
J. Duriez, R. Wan (University of Calgary, Canada)

11:35 - 12:05 Swelling processes in grouting mortar induced by local phase transition
M. Sauerwein, H. Steeb (University of Stuttgart, Germany)

12:05 - 12:35 Conceptual model of the microstructure of hydrophobized sand in unsaturated state conditions
P. Baryla, M. Lefik (Lodz University of Technology)

12:35 - 14:00 LUNCH

14:00 - 14:45 Keynote Lecture
Mechanics and multi-physics of drying of particulate and polymer materials
Tomasz Hueckel (Duke University, USA)

14:45 - 15:15 Impact of drying – wetting cycles on the microstructure and hydraulic behaviour of a compacted clayey silt
A. Azizi[1], G. Musso[1], C. Jommi[2] ([1]Politecnico di Torino, Italy ; [2]Delft University of Technology, The Netherlands)

15:15 - 15:45 Experimental observations and constitutive description of the effect of compaction banding on the hydraulic properties of porous rock
J. Leuthold, E. Gerolymatou, M. Vergara (Karlsruhe Institute of Technology, Germany)

15:45 - 16:05 COFFEE BREAK

16:05 - 16:35 The role of gas on the hydro-mechanical behaviour of peat
S. Muraro, C. Jommi (Delft University of Technology, The Netherlands)

16:35 - 17:05 A new practical analytical solution for the one-dimensional consolidation under a general time-dependent loading
M. Stickle, M. Pastor, D. Manzanal, A. Yague, P. Mira (Universidad Politécnica de Madrid, CEDEX, Spain)

17:05 - 17:35 Application of IGA-FEM to second-gradient poroelastoplasticity
C. Plua[1,2], C. Tamagnini[2], P. Besuelle[1] ([1]Université Grenoble Alpes, France ; [2]University of Perugia, Italy)

17:35 - 18:05 Numerical and Experimental Approaches Using Unconventional Geomechancs for Porous Media
Mustafa Sari, Manolis Veveakis, Thomas Poulet, Klaus Regenauer-Lieb (University of New South Wales, CSIRO Energy and Resources Group, Australia)

18:05 - 18:30 ALERT General Assembly

18:30 - 20:00 Poster Session (intermediate level) and aperitif

20:00 DINNER

28th ALERT Workshop Program

Aussois, 3rd October 2017

Session II: Must Critical State Theory for Granular Mechanics be Revisited?

Coordinators: Yannis F. Dafalias (UC Davis, USA; National Technical University of Athens, Greece), Gioacchino Viggiani (Université Grenoble Alpes, France)

8:30 - 8:40	Why the workshop? Yannis F. Dafalias[1], Gioacchino Viggiani[2] ([1]UC Davis, USA; National Technical University of Athens, Greece ; [2]Université Grenoble Alpes, France)
8:40 - 9:10	Critical State: misleading elegance? J. Carlos Santamarina (KAUST, Saudi Arabia)
9:10 - 9:20	Questions, comments and audience participation
9:20 - 9:50	Fabric: a missing link between Critical State and Critical State Theory Yannis F. Dafalias[1,2], Achilleas G. Papadimitriou[2], Alexandros I. Theocharis[2], Emmanouil Vairaktaris[2] ([1]UC Davis, USA ; [2]National Technical University of Athens, Greece)
9:50 - 10:00	Questions, comments and audience participation
10:00 - 10:30	Critical State of finely grained soils under “environmental loads“ Cristina Jommi[1], Guido Musso[2], Claudio Tamagnini[3] ([1]Delft University of Technology, The Netherlands ; [2]Politecnico di Torino, Italy ; [3]Universita degli Studi di Perugia, Italy)
10:30 - 10:40	Questions, comments and audience participation
10:40 - 11:10	**COFFEE BREAK**
11:10 - 11:40	Is Critical State a utopia? A Barodesy answer Dimitrios Kolymbas (University of Innsbruck, Austria)
11:40 - 11:50	Questions, comments and audience participation

11:50 - 12:20 On critical state, rate and state, and thermodynamic state of soils
Itai Einav (The University of Sydney, Australia)

12:20 - 12:30 Questions, comments and audience participation

12:30 - 12:40 Closing comments
Gioacchino Viggiani[1], Yannis F. Dafalias[2] ([1]Université Grenoble Alpes, France ; [2]UC Davis, USA; National Technical University of Athens, Greece)

12:40 - 14:30 LUNCH

15:00 - 17:00 ALERT Board of Directors

17:30 - 18:30 ALERT PhD Prize 2017

18:30 - 19:30 ALERT Special Lecture 2017
Systematic Description of Multiphase Flow in Porous Media
Prof. William G. Gray (University of North Carolina, Chapel Hill and University of Vermont, Burlington, USA)

20:00 DINNER

28th ALERT Workshop Program

Aussois, 4th October 2017

Session III: Advanced numerical modelling of geomaterials with emphasis on large deformation and flow problems

Coordinators: Michael A. Hicks (TU Delft, The Netherlands), Pablo Mira (CEDEX and Universidad Politécnica de Madrid, Spain), Lorenzo Sanavia (Università degli Studi di Padova, Italy)

8:30 - 8:40 Opening
Michael A. Hicks[1], Pablo Mira[2], Lorenzo Sanavia[3] ([1]TU Delft, The Netherlands ; [2]Universidad Politécnica de Madrid, Spain ; [3]Università degli Studi di Padova, Italy)

8:40 - 9:05 Coupling solid and fluid phases in fast landslide propagation
Manuel Pastor[1], Angel Yagüe[1], Miguel Martin Stickle[1], Diego Manzanal[1], Saeid Moussavi[1], Chuan Lin[1], Andrea Furlanetto[2], Pablo Mira[3], Jose A. Fernandez Merodo[4] ([1]Universidad Politécnica de Madrid, Spain ; [2]University of Padova, Italy ; [3]CEDEX, Spain ; [4]Instituto Geológico y Minero de España, Spain)

9:05 - 9:30 Cylinder Drag through Saturated Granular Bed in Zero Effective Gravity: Experiment and SPH Simulation
Siliang Guo, Takashi Matsushima (University of Tsukuba, Japan)

9:30 - 9:55 Mechanisms and consequence of bed entrainment for landslides of the flow type
Sabatino Cuomo (University of Salerno, Italy)

9:55 - 10:20 Local Max-Ent meshfree method applied to large deformation problems in saturated soils
Pedro Navas[1], Lorenzo Sanavia[2], Susana López-Querol[3], Rena C. Yu[1] ([1]University of Castilla-La Mancha, Spain; [2]University of Padova, Italy ; [3]University College London, United Kingdom)

10:20 - 10:50 **COFFEE BREAK**

10:50 - 11:15 Eulerian-Lagrangian scheme for hydro-mechanical simulations on CT-scans

Martin Lesueur[1], Manolis Veveakis[1], Thomas Poulet[2] ([1]University of New South Wales, Australia ; [2]CSIRO, Australia)

11:15 - 11:40 Multiscale modeling of large deformation in geosynthetic-reinforced granular soils
Hongyang Cheng[1], Ning Guo[2], Hariyuki Yamamoto[3] ([1]University of Twente, The Netherlands ; [2]Carleton University, Canada ; [3]Hiroshima University, Japan)

11:40 - 12:05 G-PFEM: a Particle Finite Element Method platform for geotechnical applications
Lluís Monforte[1], Marcos Arroyo[1], Antonio Gens[1], Josep Maria Carbonell[2] ([1]Universitat Politècnica de Catalunya, Spain ; [2]International Center for Numerical Methods in Engineering – CIMNE, Spain)

12:05 - 12:30 Numerical simulation of cone penetration tests using G-PFEM
Laurin Hauser[1], Lluís Monforte[2], Helmut F. Schweiger[1], Marcos Arroyo[2] ([1]Graz University of Technology, Austria ; [2]Universitat Politècnica de Catalunya, Spain)

12:30 - 14:30 LUNCH

14:30 - 14:55 Modelling of the progressive failure of the sensitive landslide in Saint Monique, Quebec
Quoc Anh Tran, Wojciech T. Sołowski (Aalto University, Finland)

14:55 - 15:20 The role of constitutive models in large deformation MPM simulations
Elliot James Fern, Kenichi Soga (University of California Berkeley, USA)

15:20 - 15:45 Application of the random material point method to slope reliability, risk and the evolution of slope failure mechanisms
Michael Hicks[1], Philip Vardon[1], Bin Wang[2], Leon Gonzalez-Acosta[1] ([1]Delft University of Technology, The Netherlands ; [2]Chinese Academy of Sciences, Wuhan, China)

15:45 - 16:15 COFFEE BREAK

16:15 - 16:40 Real scale test design of a sand flowslide by MPM slope (in)stability analysis
Marco Bolognin[1], Michael Hicks[1], Philip Vardon[1], Alexander Rohe[2] ([1]Delft University of Technology, The Netherlands ; [2]Deltares, The Netherlands)

16:40 - 17:05 Impact of fast landslides against protective barriers: preliminary analyses with the Material Point Method
Francesca Ceccato, Paolo Simonini (University of Padova, Italy)

17:05 - 17:30 Modelling of compaction grouting using the implicit MPM

Peter Geißler[1], Ilaria Iaconeta[2], Matthias Baeßler[1], Pablo Cuéllar[1] ([1]Bundesanstalt für Materialforschung und –prüfung, Germany ; [2]International Center for Numerical Methods in Engineering – CIMNE, Spain)

20:00 DINNER

27th ALERT Doctoral School

Aussois, 5th October 2017

Discrete Element Modeling

Coordinators:
Gaël Combe (3SR, Université Grenoble Alpes, France)
Stefan Luding (University Twente, The Netherlands)

8:30 - 8:45	**Introduction** Stefan Luding[1], Gaël Combe[2] ([1]University Twente, The Netherlands ; [2]3SR, Université Grenoble Alpes, France)
8:45 - 10:30	**Simulations PART I (Molecular Dynamics, Event Driven, DEM basics)** Stefan Luding (University Twente, The Netherlands)
10:30 - 11:00	**COFFEE BREAK**
11:00 - 12:30	**Simulations PART II (Molecular Dynamics, Event Driven, DEM basics)** Stefan Luding (University Twente, The Netherlands)
12:30 - 14:00	**LUNCH**
14:00 - 16:00	**Advanced contact laws for DEM applications** Christophe Martin (SIMAP, Université Grenoble Alpes, France)
16:00 - 16:30	**COFFEE BREAK**
16:30 - 18:30	**Contact Dynamics** Farhang Radjai (LMGC, Université de Montpellier, France)
20:00	**DINNER**

27th ALERT Doctoral School

Aussois, 6th October 2017

Discrete Element Modeling

Coordinators:
Gaël Combe (3SR, Université Grenoble Alpes, France)
Stefan Luding (University Twente, The Netherlands)

8:30 - 10:15	**Good practice and sample preparation** Gaël Combe (3SR, Université Grenoble Alpes, France)
10:15 - 10:45	**COFFEE BREAK**
10:45 - 12:30	**DEM applied to soil mechanics** Vanessa Magnanimo, Kianoosh Taghizadeh (University Twente, The Netherlands)
12:30 - 14:00	**LUNCH**
14:00 - 15:30	**DEM applied to rock mechanics** Frédéric Victor Donzé (3SR, Université Grenoble Alpes, France)
15:30 - 16:15	**Granular rheology, granular matter, Dense flows and micro-macro transition PART I** Stefan Luding (University Twente, The Netherlands)
16:15 - 16:45	**COFFEE BREAK**
16:45 - 17:30	**Granular rheology, granular matter, Dense flows and micro-macro transition PART II** Vanessa Magnanimo (University Twente, The Netherlands)
17:30 - 19:00	**LBM method for Fluid/Grain coupling** Jean-Yves Delenne (INRIA, Université de Montpellier, France)
20:00	**DINNER**

27th ALERT Doctoral School

Aussois, 7th October 2017

Discrete Element Modeling

Coordinators:
Gaël Combe (3SR, Université Grenoble Alpes, France)
Stefan Luding (University Twente, The Netherlands)

Two parallel sessions

8:30 - 12:30 **DEM for beginners (practicing 2D modelling and analysing tools)**
Gaël Combe, Vincent Richefeu (3SR, Université Grenoble Alpes, France)
no skill required
For this practical session, the organizers will provide bootable US-Bkey with OS (linux) and DEM programs pre-installed. 10 laptops will be provided by the organizers.

8:30 - 12:30 **DEM for experts (practicing 3D modeling - MercuryDPM.org))**
Stefan Luding, Anthony Thornton (University Twente, The Netherlands)
Basics in programming language are required
For this practical session, students have to bring their own laptops. This session may be continued after the lunch for whose who want to.

12:30 - 14:00 **LUNCH**