



ALERT GEOMATERIALS

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

27th ALERT Workshop and School

Aussois, 3rd October to 8th October 2016

Preliminary Programme

(July 12, 2016)



27th ALERT Workshop Program

Aussois, 3rd October 2016

Session I: New trends in micromechanical approaches of Particulate Materials – experiments and modelling aspects

Coordinators: Minna Karstunen (Chalmers University of Technology, Sweden), Nadia Benahmed (IRSTEA, France), Mahdia Hattab (Université de Lorraine, France)

8:20 - 8:30 Opening of the 27th ALERT Workshop

Manuel Pastor (Universidad Politécnica de Madrid, Spain), President of ALERT

8:30 - 9:10 Invited Speaker

Experimental study of the cracking mechanisms of clay during drying

Jean-Marie Fleureau (CentraleSupélec Chatenay-Malabry, France)

9:10 - 9:35 Quantitative comparison between the crack apertures, strains and microstructure in Tournemire clay-rocks

Anne-Laure Fauchille (University of Poitiers, France)

9:35 - 10:00 Parameteric sensitivity study of particle shape effect through 3D printing

Yu-Feng Su (Florida International University, USA)

10:00 - 10:30 COFFEE BREAK

10:30 - 11:10 Invited Speaker

Microstructural changes in the background of the one-dimensional compression behaviour of a stiff clay

Federica Cotecchia (Technical University of Bari, Italy)

11:10 - 11:35 On the determination and description of fabric in natural granular materials

Max Wiebicke (Technische Universität Dresden, Germany)

11:35 - 12:00 Conceptual micromechanical model for non-active clays

Matteo Pedrotti (University of Strathclyde, UK)

- 12:00 - 12:25** Description of the mechanical response of soils subjected to suffusion based on a micro-hydromechanical model
Rodaina Aboul Hosn (Laboratoire 3SR, France)
- 12:30 - 14:30** **LUNCH**
- 14:30 - 15:10** **Invited Speaker**
On the observation of trans-scale structural response of soft soils during mechanical loading
Jelke Dijkstra (Chalmers University of Technology, Sweden)
- 15:10 - 15:35** Validity of DEM in describing stresses in wet granular materials
Jérôme Duriez (University of Calgary, Canada)
- 15:35 - 16:00** Experimental analysis of interparticle force distribution in granular media
Stephen A. Hall (Lund University, Sweden)
- 16:00 - 16:25** Scale separation in suffusion: a micromechanical attempt
Antoine Wautier (IRSTEA, France)
- 16:25 - 17:30** **COFFEE BREAK**
- 17:30 - 18:00** **ALERT General Assembly**
- 18:00 - 20:00** **Poster Session (intermediate level) and aperitif**
- 20:00** **DINNER**



27th ALERT Workshop Program

Aussois, 4th September 2016

Session II: Mechanics of multiphase porous media in modelling cementitious materials: from early ages to durability issues

Coordinators: Lorenzo Sanavia, Francesco Pesavento (Università degli Studi di Padova, Italy), Matthieu Briffaut (Laboratoire 3SR, France)

8:30 - 8:40 Session Opening

Francesco Pesavento¹, Matthieu Briffaut², Lorenzo Sanavia¹ (¹Università degli Studi di Padova, Italy ; ²Laboratoire 3SR, France)

8:40 - 9:05 Intrinsic, apparent and relative permeability estimation of cementitious materials based on pore size distributions

Lionel Ecay, David Grégoire, Fadi Khaddour, Gilles Pijaudier-Cabot (Université de Pau et des Pays de l'Adour, France)

9:05 - 9:30 Numerical coupling between mechanical state and permeability for concrete applied on a 3D splitting test

M. Ezzedine El Dandachy, Matthieu Briffaut, Frédéric Dufour, Stefano Dal Pont (Laboratoire 3SR, France)

9:30 - 9:55 Water flow in cracking concrete : experimental study and numerical modeling based on a probabilistic cracking approach

Giuseppe Rastello¹, Claude Boulay², Stefano Dal Pont³, Jean-Louis Tailhan², Pierre Rossi² (¹École Centrale de Nantes, France ; ²Université Paris-Est, France ; ³Laboratoire 3SR, France)

9:55 - 10:25 COFFEE BREAK

10:25 - 10:50 Nano-granular texture of cement hydrates

Katerina Ioannidou¹, Franz-Josef Ulm¹, Pierre Levitz², Roland J.-M. Pellenq¹, Emanuela Del Gado³ (¹Massachusetts Institute of Technology, Cambridge, USA; ²University Pierre et Marie Curie, France; ³Georgetown University, Washington, USA)

10:50 - 11:15 Compelling issues in modelling concrete with recycled aggregates

Gianluca Mazzucco, Giovanna Xotta, Beatrice Pomaro, Carmelo Majorana (Università degli Studi di Padova, Italy)

- 11:15 - 11:40** Constitutive modelling of hydrating cement paste : application to oil-well cement sheath integrity
Siavash Ghabezloo¹, Jean Sulem¹, Nicolaine Agofack^{1,2}, Marcos Samudio¹, Sara Bahafid¹ (¹École des Ponts ParisTech, France; ²SINTEF, Norway)
- 11:40 - 12:20** **Invited Speaker**
Modelling Coupled Chemo-Hygro-Thermo-Mechanical Phenomena in Porous Building Materials
Dariusz Gawin¹, Witold Grymin¹, Marcin Koniorczyk¹ and Francesco Pesavento² (¹Lodz University of Technology, Poland; ²Università degli Studi di Padova, Italy)
- 12:30 - 14:30** **LUNCH**
- 15:00 - 17:00** **ALERT Board of Directors**
- 17:30 - 18:30** **ALERT PhD Prize 2016**
- 18:30 - 19:30** **ALERT Special Lecture 2016**
Planetary geomechanics
Prof. Takashi Matsushima (University of Tsukuba, Japan)
- 20:00** **BANQUET**



27th ALERT Workshop Program

Aussois, 5th October 2016

Session III: Geomechanics of faults, with applications spanning from earthquake nucleation to landslides

Coordinators: Manolis Veveakis, Klaus Regenauer-Lieb (University of New South Wales, Australia), Ioannis Stefanou, Jean Sulem (École des Ponts ParisTech, France)

- 8:30 - 8:35** Opening
Manolis Veveakis¹, Klaus Regenauer-Lieb¹, Ioannis Stefanou², Jean Sulem² (¹University of New South Wales, Australia ; ²École des Ponts ParisTech, France)
- 8:35 - 8:55** Faulting: Do we know what we are talking about?
Gary Couples (Heriot-Watt University, Edinburgh, UK)
- 8:55 - 9:15** Experimental Investigation of the Shear Strength of Rock Mass with Intermittent Joints
Eleni Gerolymatou, Theodoros Triantafyllidis (Karlsruhe Institute of Technology, Germany)
- 9:15 - 9:35** Fault orientation: how it affects the stick-slip behaviour of saturated sandstones at the laboratory scale
Elli-Maria Charalampidou¹, Georg Dresen² (¹Heriot Watt University, Edinburgh, UK ; ²GFZ German Research Centre for Geosciences, Germany)
- 9:35 - 10:10** **Keynote lecture**
Effect of Brittle off-fault Damage on Earthquake Rupture Dynamics
Harsha Bhat (École Normale Supérieure, France)
- 10:10 - 10:40** **COFFEE BREAK**
- 10:40 - 11:00** Geomechanical Simulation of Structural Geology: More than just a boundary value problem?
Helen Lewis (Heriot-Watt University, Edinburgh, UK)
- 11:00 - 11:20** Borehole stability and flow-through drying in gas flow
Euripides Papamichos (Aristotle University of Thessaloniki, Greece)

- 11:20 - 11:40** Collapse of granular media subjected to wetting
Zahra El Korchi, Maroc Frédéric, Moulay Saïd El Youssefi (University Of Montpellier, Montpellier, France)
- 11:40 - 12:00** Fracture networks in carbonate laminites
Stephanie Zihms¹, Helen Lewis¹, Gary Couples¹, Steven Hall², Jim Somerville¹ (¹Heriot-Watt University, Edinburgh, UK ; ²Lund University, Sweden)
- 12:00 - 12:20** Couplings involved in the weakening of faults: comparison of linear stability and finite element analysis with field observations
Hadrien Rattez¹, Ioannis Stefanou¹, Manolis Veveakis², Thomas Poulet², Jean Sulem¹ (¹École des Ponts ParisTech, France ; ²University of New South Wales, Australia)
- 12:30 - 14:30** **LUNCH**
- 14:30 - 15:05** **Keynote Lecture**
Microseismicity and deep fluid injections
François Cornet (EOST-Université de Strasbourg, France)
- 15:05 - 15:25** Earthquake nucleation and observations of mechanical-hydraulic-geochemical interactions due to drainage of a surface water reservoir in Switzerland
R.J. Lunn, M. Kinali, R. Lord, S. Pytharouli, Z.K. Shipton, M. Stillings (University of Strathclyde, UK)
- 15:25 - 15:45** Analysis of dynamics in multiphysics modelling of active faults
Sotiris Alevizos, Thomas Poulet, Manolis Veveakis, Klaus Regenauer-Lieb (University of New South Wales, Australia)
- 15:45 - 16:15** **COFFEE BREAK**
- 16:15 - 16:35** Thermo-poro-mechanical modelling of the creeping and failure phases of catastrophic landslides
Francesca Brambilla¹, Antonis Zervos², Claudio Di Prisco¹ (¹Politecnico di Milano, Italy ; ²University of Southampton, UK)
- 16:35 - 16:55** Modelling multiphase geomaterials at high temperature with application to strain localization and rapid catastrophic landslides
Lorenzo Sanavia¹, Toan Duc Cao² (¹Università degli Studi di Padova, Italy ; ²Texas Tech University, USA)
- 16:55 - 17:30** **Keynote Lecture**
Modelling faults from engineering (landslides) to geodynamic (subduction initiation) scales
Klaus Regenauer-Lieb (University of New South Wales, Australia)
- 20:00** **DINNER**



26th ALERT Doctoral School

Aussois, 6th October 2016

Modelling of instabilities and bifurcation in Geomechanics

Coordinators:

Jean Sulem (École des Ponts ParisTech, France)

Ioannis Stefanou (École des Ponts ParisTech, France)

Euripides Papamichos (Aristotle University of Thessaloniki, Greece)

Manolis Veveakis (University of New South Wales, Australia)

8:30 - 09:00 Introduction to the Course

Jean Sulem¹, Ioannis Stefanou¹, Euripides Papamichos², Manolis Veveakis³ (¹École des Ponts ParisTech, France ; ²Aristotle University of Thessaloniki, Greece ; ³University of New South Wales, Australia)

9:00 - 10:00 Overview of instability phenomena in Geomechanics

Tomasz Hueckel (Duke University, USA)

10:00 - 10:30 COFFEE BREAK

10:30 - 12:30 Fundamentals of bifurcation and stability analysis

Ioannis Stefanou (École des Ponts ParisTech, France)

12:30 - 14:00 LUNCH

14:00 - 16:00 Material instability and strain localization analysis

Jean Sulem (École des Ponts ParisTech, France)

16:00 - 16:30 COFFEE BREAK

16:30 - 18:00 Experimental investigation of strain localization

Pierre Bésuelle (Laboratoire 3SR, France)

20:00 DINNER



26th ALERT Doctoral School

Aussois, 7th October 2016

Modelling of instabilities and bifurcation in Geomechanics

Coordinators:

Jean Sulem (École des Ponts ParisTech, France)

Ioannis Stefanou (École des Ponts ParisTech, France)

Euripides Papamichos (Aristotle University of Thessaloniki, Greece)

Manolis Veveakis (University of New South Wales, Australia)

9:00 - 10:30 Numerical modelling of strain localization

Antonis Zervos¹, Panos Papanastasiou² (¹University of Southampton, England; ²University of Cyprus, Cyprus)

10:30 - 11:00 COFFEE BREAK

11:00 - 12:30 Applications

Euripides Papamichos (Aristotle University of Thessaloniki, Greece)

12:30 - 14:00 LUNCH

14:00 - 15:00 Multiphysics couplings and instabilities I

Jean Sulem (École des Ponts ParisTech, France)

15:00 - 16:30 Multiphysics couplings and instabilities II

Manolis Veveakis (University of New South Wales, Australia)

16:30 - 17:00 COFFEE BREAK

17:00 - 18:30 Numerical modelling of multiphysics couplings and strain localization

Frédéric Collin (Université de Liège, Belgium)

20:00 DINNER



26th ALERT Doctoral School

Aussois, 8th October 2016

Modelling of instabilities and bifurcation in Geomechanics

Coordinators:

Jean Sulem (École des Ponts ParisTech, France)

Ioannis Stefanou (École des Ponts ParisTech, France)

Euripides Papamichos (Aristotle University of Thessaloniki, Greece)

Manolis Veveakis (University of New South Wales, Australia)

9:00 - 10:30 From theory to practice: supervised group exercises (I)

Thomas Poulet¹, Ioannis Stefanou², Manolis Veveakis¹, Hadrien Rattez²
(¹University of New South Wales, Australia ; ²École des Ponts ParisTech, France)

10:30 - 11:00 COFFEE BREAK

11:00 - 12:30 From theory to practice: supervised group exercises (II)

Thomas Poulet¹, Ioannis Stefanou², Manolis Veveakis¹, Hadrien Rattez²
(¹University of New South Wales, Australia ; ²École des Ponts ParisTech, France)

12:30 - 14:00 LUNCH

14:00 - 16:00 From theory to practice: supervised group exercises (III)

Thomas Poulet¹, Ioannis Stefanou², Manolis Veveakis¹, Hadrien Rattez²
(¹University of New South Wales, Australia ; ²École des Ponts ParisTech, France)

16:00 - 16:15 Closure

Jean Sulem¹, Ioannis Stefanou¹, Euripides Papamichos², Manolis Veveakis³ (¹École des Ponts ParisTech, France ; ²Aristotle University of Thessaloniki, Greece ; ³University of New South Wales, Australia)