30th ALERT Workshop and School
Aussois, 30th September to 4th October 2019

Preliminary Program
(1st July 2019)
ALERT Geomaterials
Alliance of Laboratories in Europe for Education, Research and Technology
http://alertgeomaterials.eu
SESSION I: Upscaling in Geotechnical Engineering (70th anniversary of Roberto Nova)
Coordinators: Claudio Di Prisco (Politecnico di Milano), Cristina Jommi (Politecnico di Milano), Claudio Tamagnini (Università di Perugia)

8:20 – 8:30 Opening of the 30th ALERT Workshop
Cino VIGGIANI (Université Grenoble-Alpes, France), President of ALERT

8:30 – 8:40 Session Opening
Claudio DI PRISCO (Politecnico di Milano), Cristina JOMMI (Politecnico di Milano), Claudio TAMAGNINI (Università di Perugia)

8:40 – 9:10 Invited Speaker
A challenging problem: how can discrete element simulations bring advances in constitutive modelling?
Bruno CHAREYRE (Université Grenoble-Alpes, France)

9:10 – 9:35 A double-scale FEMxDEM model applied to cohesive-frictional granular materials in polyaxial loading conditions.
Cyrille-B COUTURE (Université Grenoble-Alpes), Jacques DESRUES (Université Grenoble-Alpes), Vincent RICHEFEU (Université Grenoble-Alpes), Pierre BESUELLE (Université Grenoble-Alpes), Frédéric COLLIN (Université de Liège)

9:35 – 10:00 FFT-based Homogenization of Gas Hydrates Bearing Sediments
Axelle ALAVOINE (Ecole des Ponts ParisTech, IFSTTAR, CNRS), Patrick DANGLA (Ecole des Ponts ParisTech, IFSTTAR, CNRS), Jean-Michel PEREIRA (Ecole des Ponts ParisTech, IFSTTAR, CNRS)

10:00 – 10:30 Invited Speaker
Revisiting failure in granular media from discrete constitutive modelings
Luc SIBILLE (Université Grenoble-Alpes)

10:30 – 10:55 COFFEE BREAK

10:55 – 11:20 Multi-scale modeling of sand-silt mixtures with application on internal erosion
Pierre-Yves HICHER (Ecole Centrale de Nantes)
11:20 – 11:45 Revisiting the Nova “Sinfonietta Classica”: application to granular soils subjected to internal erosion by suffusion
Quentin ROUSSEAU (GeM, Ecole Centrale de Nantes), Giulio SCIARRA (GeM, Ecole Centrale de Nantes), Rachel GELET (GeM, Université de Nantes), Didier MAROT (GeM, Université de Nantes)

11:45 – 12:10 Constitutive laws for crushable solids accounting for grain-scale processes
Giuseppe BUSCARNERA (Northwestern University)

12:10 – 12:35 Numerical simulation of saturated active clay under chemo-mechanical loading
Farzaneh GHALAMZAN (Università di Trento), Alessandro GAJO (Università di Trento), Lucia SIMEONI (Università di Trento)

12:35 – 14:35 LUNCH

14:35 – 15:05 Invited Speaker
Multiphase approach to modelling of fast landslides and related phenomena
Manuel PASTOR (Universidad Politécnica de Madrid)

15:05 – 15:30 A granular hydrodynamic model covering solid, fluid and gaseous states and transitions in between
Ebrahim ALAEI (The University of Sydney), Benjy MARKS (The University of Sydney), Itai EINAV (The University of Sydney)

15:30 – 15:55 Numerical modelling of a bentonite seal: From small scale experiments to real scale structures
Liliana GRAMEGNA (Université de Liège) & Robert CHARLIER (Université de Liège)

15:55 – 16:25 COFFEE BREAK

16:25 – 16:50 Definition of macroelement models for reproducing the hydromechanical coupled response of tunnel fronts and shallow foundation
Luca FLESSATI (Politecnico di Milano), Claudio DI PRISCO (Politecnico di Milano)

16:50 – 17:20 Invited Speaker
Macroelement modelling in geomechanics
Panagiotis KOTRONIS (Ecole Centrale de Nantes)

17:30 – 18:00 ALERT General Assembly

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

20:00 DINNER
30th ALERT Workshop Program
Aussois, 1st October 2019

SESSION II: The mechanics of root-soil systems: from microscopic to macroscopic approaches
Coordinators: Evelyne Kolb (Sorbonne Université) & Luc Sibille (UGA)

8:20 – 8:30 Session Opening
Evelyne KOLB (Sorbonne Université), Luc SIBILLE (Université Grenoble-Alpes)

8:30 – 9:00 Invited Speaker
Quantification of mechanical and hydrological root-reinforcement
Gerrit MEIJER (University of Dundee)

9:00 – 9:30 Invited Speaker
Root anchorage of trees under wind load
Pauline DEFOSSEZ (ISPA, INRA, Bordeaux Science Agro)

9:30 – 10:00 Invited Speaker
Scaling behavior of root growth in granular materials
Farhang RADJAI (LMGC, Université de Montpellier, CNRS)

10:00 – 10:30 Flash-talks (6 min/talk):

Kinetics of growth responses of a root encountering an obstacle
Marie-Béatrice BOGEAT-TRIBOULOT (Université de Lorraine, INRA, AgroPariTech, UMR Silva)

Plant root growing against or around mechanical obstacles
Evelyne KOLB (Sorbonne Université)

The cap size and shape of *Arabidopsis thaliana* primary roots impact the root responses to an increase in medium strength
Valérie LEGUE (Université Clermont Auvergne, INRA, PIAF)

Questions on flash-talks (10 min)

10:30 – 11:00 COFFEE BREAK
11:00 – 11:30 Invited Speaker
Experimental and numerical investigations of soil-root interactions for analysing the impact of forest vegetation on shallow landslides
Guillaume VEYلون, Franck BOURRIER (IRSTEA Aix-en-Provence / Grenoble)

11:30 – 12:00 Invited Speaker
Physics and hydrology of mucilage-soil interactions
Andrea CARMINATI (Chair of Soil Physics, University of Bayreuth)

12:00 – 12:30 Flash-talks (6 min/talk):
- Microscale variations in particle forces and root responses to soil mechanical stress
  Lionel DUPUY (James Hutton Institute)
- Digital image analysis of the root-soil interaction
  Floriana ANSELMUCCI (Université Grenoble-Alpes, Grenoble INP, CNRS, 3SR)
- Multi-scale observations on a root-permeated compacted soil at different hydraulic states
  Alessandro FRACCICA (Universitat Politècnica de Catalunya, AMAP, CIRAD, CNRS, IRD, Univ. Montpellier)

Questions on flash-talks (10 min)

12:30 – 14:30 LUNCH

15:00 – 17:00 ALERT Board of Directors

17:30 – 18:30 ALERT PhD Prize 2019

18:30 – 19:30 ALERT Special Lecture 2019
Growth of slip surfaces (life is dangerous)
Professor Alexander M. Puzrin, ETH Zurich, Switzerland

20:00 BANQUET
SESSION III: Computational methods in snow and avalanche release mechanics
Organizers: Johan Gaume (EPFL), Pascal Hagenmuller (CNRM - CEN, Grenoble), François Nicot (Univ. Grenoble-Alpes, IRSTEA), Guillaume Chambon (Univ. Grenoble-Alpes, IRSTEA)

8:20 – 8:30 Opening Session
Johan GAUME (EPFL), Pascal HAGENMULLER (CNRM - CEN), François NICOT (IRSTEA), Guillaume CHAMBON (IRSTEA)

8:30 – 9:10 Invited Speaker: General challenges on snow and avalanche mechanics
Snow avalanches – from snow failure to slab release.
Juerg SCHWEIZER (SLF), Bastian Bergfeld, Grégoire Bobillier, Achille Capelli, Johan Gaume, Benjamin Reuter, Alec van Herwijnen

9:10 – 9:40 Towards field measurements of crack propagation in weak snowpack layers at the slope scale
Alec VAN HERWIJNEN (SLF), Bastian BERGFELD

9:40 – 10:10 Acoustic emissions from progressive failure of snow
Achille CAPELLI (SLF), Ingrid REIWEGER, Juerg SCHWEIZER

10:10 – 10:40 COFFEE BREAK

10:40 – 11:20 Invited Speaker: Micromechanical modelling of snow mechanics
Internal time scales and spatio-temporal deformation instabilities in snow mechanics
Michael ZAIKER (Univ Erlangen), Stefan LIEBENSTEIN (Univ Erlangen, Univ. Edinburgh), Tom BARRACLOUGH (Univ. Edinburgh), Jane BLACKFORD (Univ. Edinburgh), Henning LOEWE (WSL-SLF)

11:20 – 11:50 Micromechanical modeling of snow failure and dynamic fracture
Grégoire BOBILLIER (SLF), Alec van HERWIJNEN, Bastian BERGFELD, Johan GAUME, Jürg SCHWEIZER
11:50 – 12:20  Modeling mixed-mode weak layer anticrack collapse – insights into the interaction of stress and energy
Philipp ROENSDAHL (2phi.de), Philipp WEISSGRAEBER

12:20 – 14:00  LUNCH

14:00 – 14:40  Invited Speaker: Numerical homogenization and constitutive modelling
Multiscale modeling of dry snow physics and mechanics: some recent advances and current challenges
Christian GEINDREAU (Univ Grenoble Alpes, 3SR, Grenoble, France), Frédéric FLIN, N. CALONNE, Antoine WAUTIER, R. GRANGER

14:40 – 15:10  From X-ray tomography images to a numerical homogenized formulation of snow viscoplasticity
Antoine WAUTIER (IRSTEA), Frédéric FLIN, Christian GEINDREAU

15:10 – 15:40  Micro-mechanically-based modelling of snow failure and post-failure behavior
Guillaume CHAMBON (UGA-IRSTEA), Tjian MEDE, Pascal HAGENMULLER, François NICOT

15:40 – 16:10  Microstructural investigation of the cone penetration test in snow
Pascal HAGENMULLER (CNRM-CEN), Isabel PEINKE, Guillaume CHAMBON

16:10 – 16:30  COFFEE BREAK

16:30 – 17:10  Invited Speaker: Slope-scale modelling
Title to be announced
Wei WU (BOKU, Vienna, Austria)

17:10 – 17:40  A continuum damage material point method for snow and avalanche mechanics
Johan GAUME (EPFL), Alec VAN HERWIJNEN, Ted GAST, Joseph TERAN, Chenfanfu JIANG

17:40 – 18:10  Modelling dense flow regimes in snow avalanches using DEM
Camille LIGNEAU (SLF), Betty SOVILLA, Johan GAUME

20:00  DINNER
The legacy of Ioannis Vardoulakis to Geomechanics

Coordinators:
Jean Sulem, Ecole des Ponts ParisTech
Cino Viggiani, Université Grenoble-Alpes

9:00 – 9:30 Introduction to the course
Jean Sulem, Ecole des Ponts ParisTech and Cino Viggiani, Université Grenoble-Alpes

9:30 – 11:00 Mechanics of granular materials: I. Experimental approach
Edward Andò (Université Grenoble Alpes)

11:00 – 11:30 COFFEE BREAK

11:30 – 13:00 Mechanics of granular materials I. Experimental approach
Edward Andò (Université Grenoble Alpes)

13:00 – 14:30 LUNCH

14:30 – 16:30 Landslide mechanics and growth of slip surfaces
Sasha Puzrin (ETH Zurich)

16:30 – 17:00 COFFEE BREAK

17:00 – 19:00 Modelling of strain localization in geomaterials - Higher order continuum theories and regularization techniques
Ioannis Stefanou (Ecole des Ponts ParisTech)

20:00 DINNER
The legacy of Ioannis Vardoulakis to Geomechanics

Coordinators:
Jean Sulem, Ecole des Ponts ParisTech
Cino Viggiani, Université Grenoble-Alpes

8:30 – 10:00 Petroleum Geomechanics (borehole stability, sand production, hydraulic fracturing)
Euripides Papamichos (Aristotle University of Thessaloniki) & Panos Papanastasiou (University of Cyprus)

10:00 – 10:30 COFFEE BREAK

10:30 – 12:00 Petroleum Geomechanics (borehole stability, sand production, hydraulic fracturing)
Euripides Papamichos (Aristotle University of Thessaloniki) & Panos Papanastasiou (University of Cyprus)

12:00 – 13:30 LUNCH

Itai Einav, University of Sydney

15:30 – 16:00 COFFEE BREAK

16:00 – 18:00 Hydro-mechanics of porous and granular material - Poroelasticity and beyond
Holger Steeb, Universität Stuttgart

18:00 – 18:15 Closure of the school
Jean Sulem, Ecole des Ponts ParisTech and Cino Viggiani, Université Grenoble-Alpes

20:00 DINNER