

Preliminary Workshop Programme

ISSMGE
TC-101

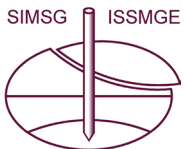
Advances in **Multiphysical Testing** of Soils and Shales

3 - 5 September 2012

EPFL, Lausanne, Switzerland

amtss.epfl.ch

SIMSG ISSMGE



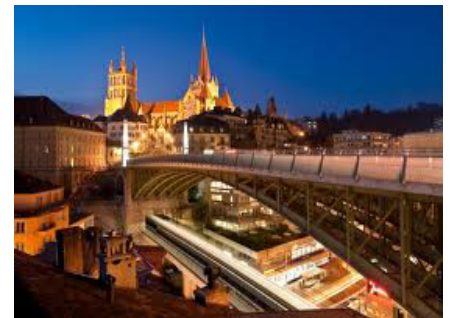
Organized by Prof. Lyesse Laloui &
Dr. Alessio Ferrari

About the Workshop

The workshop will focus on the significant advances of knowledge regarding the experimental analysis of soils and shales that have been achieved during the last decade. Some fundamental issues have been solved, and important achievements have been made in certain areas, including the development of multiphase testing facilities for non-isothermal conditions and the characterization of the microstructural arrangement for complex geomaterials.

This outstanding progress in the field has had relevant consequences in the theoretical developments of geomechanical theories, such as the constitutive modelling of multiphysical and multiscale processes, as well as important engineering applications. The workshop is aimed at stimulating the debate on the advances in experimental geomechanics; contributions on unsaturated soil testing, non-isothermal experiments and chemo-osmotic experimental evidences are welcomed. The workshop proceedings will be published in the Springer Series in Geomechanics and Geoengineering.

The workshop will be held between 3 and 5 September 2012 at the conference facilities of the EPFL in Lausanne (Switzerland). The workshop is organized by the Laboratory for Soil Mechanics (LMS) at the EPFL.



Sponsors

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UBS

Contact

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About the Venue

The inspiring and dynamic learning EPFL
ambiance comes fully to its right at the campuses of both the Swiss Federal Institute of Technology of Lausanne (EPFL) and the University of Lausanne (located just east of EPFL). With green all around - except for the southern side, which looks out over the lake - and all necessary academic and personal facilities within hand reach, the campus of EPFL offers a perfect environment. It is not without reason that more than ten thousand students and academics find their ways here.



Accommodation:

Special hotel prices have been negotiated with some hotels. If you wish to book your stay in one of those hotels, please announce yourself as a participant to the "AMTSS Workshop at EPFL" in order to profit of the special prices. Some of the hotels have limited availability: please take care to make your reservation as soon as possible. Most of the hotels in the Lausanne's area offer a free travel card for public transport during your stay. The list of hotels can be found on the workshop website: <http://amtss.epfl.ch/venue.html>.





Transport:

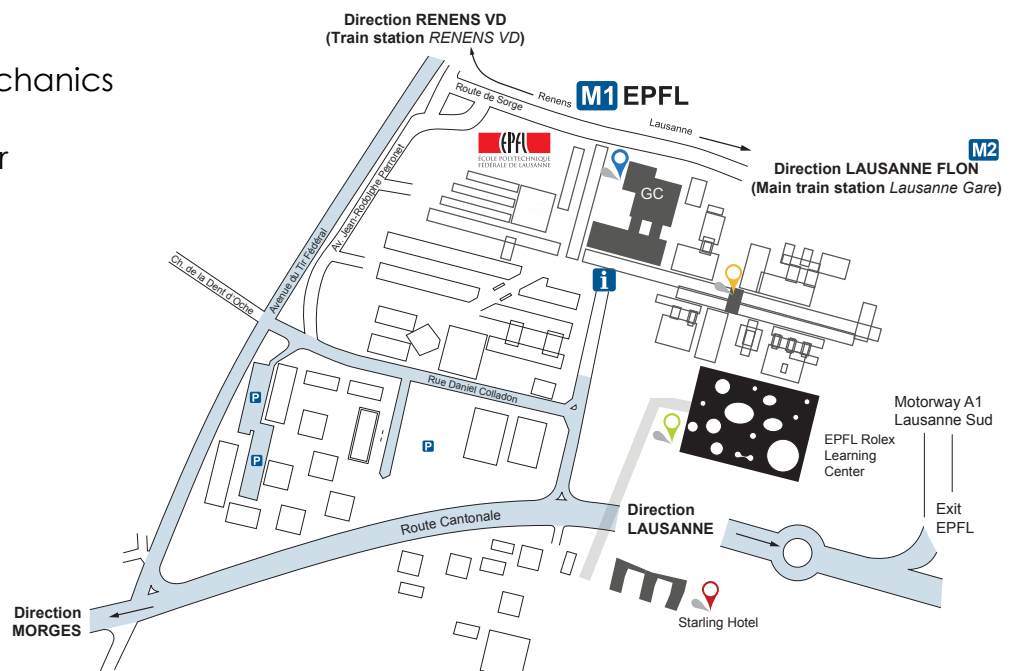
Coming by plane and by train

Genève-Cointrin is the nearest airport (40-60 minutes). The train from Zürich Airport takes approximately 2h 30 to go to Lausanne. From these airports, you can take a train to *Lausanne Gare*, then the metro (*Lausanne Gare* - Metro M2> *Lausanne Flon* > Metro M1 - *EPFL*). Or you can take a train to *Renens VD*, then the metro (*Renens VD* - Metro M1> *EPFL*).

Coming by car

The coordinates N46.52184, E6.56488 will take you directly to a parking lot at the campus.

-  Laboratory of Soil Mechanics
-  Rolex Learning Center
-  Salle Polyvalente
-  Starling Hotel



Workshop Programme

Sunday, Sep.2

18:00 - 18:30

Registration

18:30 - 19:30

Welcome cocktail

Monday, Sep.3

08:30 - 09:30

Registration

Welcome opening

09:00 - 10:40

Theme lecture

L. R. Hoyos: Advances in experimental modelling of unsaturated soil behaviour over a whole range of paths and modes of deformation

10:50 - 12:30

Thematic session

Testing in variably saturated conditions

Chairman:
A. Tarantino

Thematic session

Treated and weathered geomaterials

12:30 - 13:30

Lunch

13:30 - 15:20

Theme lecture

F. Marinho: Undrained shear of plastic soils under suction

Chairman: T. Schanz

Thematic session

Testing in non-isothermal conditions

15:35 - 18:00

Theme lecture

E.C. Leong: Triaxial testing of unsaturated soils

Chairman: X. Cheng

Thematic session

Testing in non-isothermal conditions

19:00 - 21:00

Workshop dinner

Tuesday, Sep.4

09:00 - 10:50

Theme lecture

A. Ferrari: Thermo-hydro-mechanical testing of shales

10:50 - 12:30

Thematic session

Experimental analyses of shales behaviour

Chairman:
R. Ewy

Thematic session

Compressibility, strength and time dependent investigations

12:30 - 13:30

Lunch

13:30 - 15:20

Theme lecture

E. Romero: Air tests on low-permeability claystone formations. Experimental results and simulations

Chairman: P. Marschall

Thematic session

Micro-scale investigations and image-analysis techniques

15:35 - 18:00

Theme lecture

J. Kodikara: Desiccation cracking in clayey soils: mechanisms and modelling

Chairman: F. Masroui

Thematic session

Micro-scale investigations and image-analysis techniques

18:00 - 18:30

Workshop closure

Wednesday, Sep.5

09:00 - 12:30

Short course

Advanced Experimental Geomechanics

Visit of the EPFL Soil Mechanics Laboratory

List of Contributions

1. Theme lectures

Advances in experimental modelling of unsaturated soil behaviour over a whole range of paths and modes of deformation

Laureano R. Hoyos

Undrained shear of plastic soils under suction

Fernando A. M. Marinho

Desiccation cracking in clayey soils: mechanisms and modelling

Jayantha Kodikara, Susanga Costa

Triaxial testing of unsaturated soils

E.C. Leong, T.T. Nyunt, H. Rahardjo

Thermo-hydro-mechanical testing of shales

Alessio Ferrari, Lyesse Laloui

Air tests on low-permeability claystone formations. Experimental results and simulations

Enrique Romero, Rainer Senger, Paul Marschall, Rodrigo Gómez

2. Testing in variably saturated conditions

Influence of hydraulic hysteresis on the resilient behavior of a natural compacted sand

Xuan Nam Ho, Hossein Nowamooz, Cyrille Chazallon, Bernard Migault

Monotonic simple shear response of fine grained silts under different saturation condition

F. Daliri, D. H. Basu

Effect of loading and suction history on time dependent deformation of crushed granular aggregates

Enrique Romero, Clara Alvarado, Eduardo E. Alonso

Ultrasonic testing of unsaturated soils

Z.Y. Cheng, E.C. Leong

Factors influencing water retention characteristics of granular materials

Gilbert J. Kasangaki, Gabriela M. Medero, Jin Y. Ooi

Evaluation of collapse potential investigated from different collapsible soils

Qasim A.J. Al-Obaidi, Saad F.Ibrahim, Tom Schanz

3. Testing in non-isothermal conditions

Thermo-hydro mechanical column experiment to study expansive soil behaviour

Tom Schanz, Long Nguyen-Tuan, Maria Datcheva

Shear strength of clay during thaw

Anders Beijer Lundberg

Tests in thermo-hydraulic cells to simulate the behaviour of engineered barriers

M.V. Villar, R. Gómez-Espina, P.L. Martín, J.M. Barcala

Influence of freeze-thaw action on hydro-mechanical behavior of unsaturated crushable volcanic soils

Tatsuya Ishikawa, Tetsuya Tokoro

Plane-symmetrical simulation of flow and heat transport in fractured geological media: a discrete fracture model with Comsol

Biguang Chen, Erxiang Song, Xiaohui Cheng

Formulation of Tsinghua-Thermosoil Model: a fully coupled THM model based on non-equilibrium thermodynamic approach

Zhichao Zhang, Xiaohui Cheng

An innovative double triaxial cell for thermo-hydro-mechanical investigation in unsaturated geomechanics

A. Seiphoori, A. Ferrari, L. Laloui

Thermo-hydraulic behaviour of Boom clay using a heating cell: an experimental study

Lima A., Romero E., Gens A., Li X.L & Vaunat J.

4. Micro-scale investigations and image analysis techniques

Pore size distribution and soil water suction curve from micro-tomography measurements and real 3-D digital microstructure of a compacted granular media by using direct numerical simulation technique

Felix H. Kim, Dayakar Penumadu, Volker P. Schulz and Andreas Wiegmann

Porosity and pore-size distribution of geomaterials from X-ray CT scans

H.S. Shin, K.Y. Kim & G.N. Pande

Volumetric strain mechanisms and induced anisotropy analyses in clayey materials

Mahdia Hattab, Jean-Marie Fleureau

Application of x-ray tomography to the characterisation of grain-scale mechanisms in sand

G. Kaddhour, E. Ando, S. Salager, P. Bésuelle, C. Viggiani, S. Hall, J. Desrues

Observation of shear banding characteristics on sand in torsional shear test using image analysis technique

Seto Wahyudi, Yukika Miyashita, Junichi Koseki

Experimental and quantitative study on micro-structure of soft soil in Suzhou

Xiaozhao Li, Liang Cao, Zhiyong Xiong, Rong Yang, Juan Ma

Development of a new experimental device in order to improve swelling-shrinkage analysis of clayey soils

Tatiana Maison, Jean-Bernard Kazmierczak, Farid Laouafa, Patrice Delalain

Localisation processes and size effects for fissured clay specimens

Claudia Vitone, Federica Cotecchia, Cino Viggiani

Experimental study of the deformation pattern around a penetrating coned tip

P. Paniagua, A.S. Gylland, S. Nordal

Micro-scale testing of capillary bridge evolution due to evaporation

Boleslaw Mielniczuk, Tomasz Hueckel, Moulay Said El Youssofi

Anisotropy of mica probed by nanoindentation

Rohit Pant, Liming Hu, Guoping Zhang

5. Compressibility, strength and time-dependent investigations

Meso-scale oedometer test system for volume change determination in problematic soils

Shahid Azam, Peter Gutw, Mavinakere E. Raghunandan

Long term compression behaviour of soft organic sediments

Marta Boso, Jürgen Grabe

On creep laboratory tests in soil mechanics

Arman Khoshghalb

One dimensional consolidation under time dependent loading

D. Manca, A. Ferrari, L. Laloui

Variation of cohesive sediment strength with stress level

Brendan Casey, John T. Germaine

Consolidation of soft clays through radial flow using hydraulically pressurized oedometer

M.V. Shah, A.V. Shroff

6. Experimental analyses of shales behaviour

Nanochemomechanics of shale: coupled WDS-indentation analysis

Amer Deirieh, J. Alberto Ortega, and Franz-Josef Ulm

Shale swelling/shrinkage, suction and osmosis

Russell T. Ewy

Polish experience with testing of selected shales as material for road base courses

Leszek Rafalski, Jadwiga Wilczek

Experimental methods for characterization of cap rock properties for CO₂ storage

E. Aker, E. Skurtveit, L. Grande, F. Cuisiat, Ø. Johnsen, M. Soldal, B.Bohloli

7. Treated and weathered geomaterials

Using shear wave velocity to determine the cementation effect of soft Bangkok clay mixed with cement and fly ash

K. Piriyaikul, S. Pochalard

Settlement Calculation and Back-Analysis of Soil Properties for a test embankment on a soft clay ground improved by PVD and vacuum-assisted preloading at a site in Vung Tau, Viet Nam

Nguyen Duy Quang, Su Minh Dang

Evaluation of geotechnical properties and liquefaction behavior of cohesive subgrade soil stabilized with fly ash, gypsum and lime

Saad F. Ibrahim Al.Abdullah

Experimental methodology for chemo-mechanical weathering of calcarenites

M. O. Ciantia, R. Castellanza, C. di Prisco, T. Hueckel