IS-PORTO 2023

8TH INTERNATIONAL SYMPOSIUM ON
DEFORMATION CHARACTERISTICS OF GEOMATERIALS

3RD - 6TH SEPTEMBER 2023

SYMPOSIUM PROGRAMME

IS-PORTO 2023

8TH INTERNATIONAL SYMPOSIUM ON DEFORMATION CHARACTERISTICS OF GEOMATERIALS

3rd - 6th SEPTEMBER 2023

ORGANIZED BY

TECHNICAL COMMITTEE 101 OF THE INTERNATIONAL SOCIETY OF SOIL MECHANICS AND GEOTECHNICAL ENGINEERING

LABORATORY STRESS STRENGTH TESTING OF GEOMATERIALS

SIMSG ISSMGE

ENDORSED BY

Sociedade Portuguesa de Geotecnia

U.PORTO FEUP FACULDADE DE ENGENHARIA UNIVERSIDADE DO PORTO

CONSTRUCT

INSTITUTO DA CONSTRUÇÃO

PLATINUM SPONSOR

VALE

USEFUL INFORMATION

All **plenary sessions** take place at the **Auditorium**.

The **parallel sessions** are divided among the **Auditorium** and the **Amphitheatres B032 and B035**.

A designated Meeting room is available for all participants during the days of the symposium.

All **coffee-breaks and lunches** take place in the **Central Lawn**, according to the schedule in the program.

Wireless network

A wireless network is available in the conference buildings. All participants receive a personal user-id, password, and instructions to connect to the network upon registration.

To access to the network from a computer running Windows:

- Click on the network connections icon that is available on the inferior right side of the screen.
- Select the “feup.conferencias” options and press “Connect”;
- Next, open an internet browser (Microsoft Edge, Mozilla, Chrome, etc.). And if a message appears on the screen, you will have to select the “Proceed to website” option;
- Select “Conferencias” option;
- Click on “login” and enter the supplied credentials:

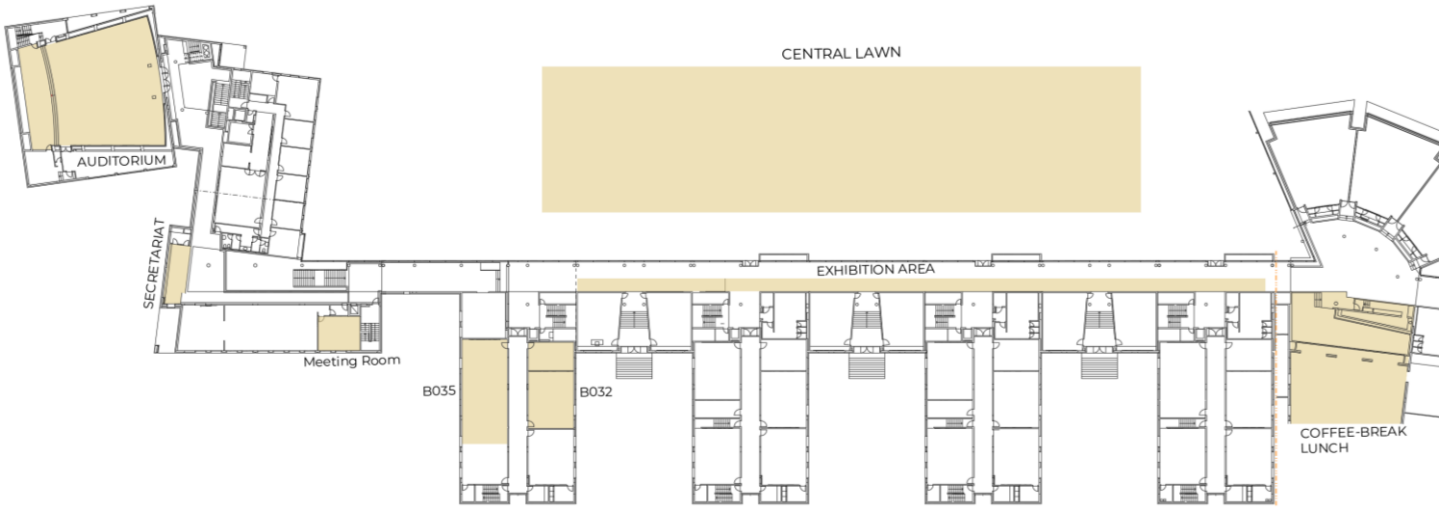
  Username: **is-porto2023**

  Password: **is-porto@feup2023**

Mobile phones

All conferences participants are kindly requested to switch off the sound of their mobile phone during the sessions.

VENUE PLAN



SOCIAL PROGRAMME

Welcome Reception & Farewell drinks

On Monday 4th September 2023 at 19:00, a Welcome Reception is organised at the Central Lawn of FEUP.

On Wednesday 6th September 2023 at 17:00, Farewell drinks will be served at the Atrium below the Auditorium.

Gala Dinner

On Tuesday 5 September 2023 at 20:00, the Conference Gala Dinner will take place at the stunning “Palácio do Freixo”, in Porto.

Welcome to the millenary and undefeated city of Porto founded on granite and schist from the most remote times when Pangea was separated by a fault that expresses itself overlooking the Atlantic coast. Here, the Douro river, crossing part of our neighbouring Spain and cutting across the North of Portugal, meets the fruitful sea of the freshest and tastiest fish in polar waters, after having excavated a UNESCO Heritage vineyard valley, where the famous Port wine and other glamorous and award-winning table wines are produced, whose vintage nectars warm the soul and elevate the local cuisine. The city's cultural tradition and its openness to those who come from other places are well-known, as these same people socialized among traders since the Phoenicians, the Romans and so many other peoples, as the Celts, Suebians, Visigoths and Arabs from El Andaluz, who together with others, such as the Sephardic Jews, created the first schools of Portuguese navigators since medieval times. From these schools, other sciences emerged and laid the foundations of the University of Porto, which in recent times has risen in the international rankings of education and research. Such a diverse geotechnical environment, from plutonic and metamorphic rocks, to their residual soils, and to transported and sedimented deposits in rivers and marine basins, has originated soils that are so diverse in grading and in physical and chemical composition. This setting motivated the attention of operators who depend on the knowledge of the thermo-hydraulic and geomechanical behaviour for the construction and maintenance of many important infrastructures in the city and its surroundings, with growing and prevailing geotechnical challenges. From the laboratories that were here created and developed, bridges with others worldwide were cemented, allowing knowledge integration and growth.

Today we invite everyone who wants to meet us in loco, to participate in IS-Porto 2023 to feel the charm of the city and of its people, in a time of interaction between researchers, academics and professionals, which we promise to do on the days when the 8th 'Symposium on Deformation Characteristics of Geomaterials', with an emphasis on laboratory work, which ISSMGE's TC101 ('Laboratory Stress Strain Strength Testing of Geomaterials') has been driving. We will be grateful for your visit and we will do everything to make you feel ours.

António Viana da Fonseca
(chairman of IS-Porto 2023)

Cristiana Ferreira
(Co-chair of IS-Porto 2023)

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Conference Co-Chair

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PROGRAMME OVERVIEW

Day 0: 3rd September (Short Courses & Workshops)

10.00-17.00 Registration

~~10.00-18.00 Short-course 1 (room G224): Simple methods to rapidly characterize and model unsaturated soil behaviour~~ (CANCELLED)

10.00-13.00 Workshop 1 (room G129): Experimental characterisation of soil damping: advancements and new approaches

14.00-18.00 Workshop 2 (room G129): Sampling in sensitive soils: advanced procedures and quality assessment

Day 1: 4th September

08.00-17.00 Registration

	Auditorium	Amphitheatre B032	Amphitheatre B035
09.00-09.35	Opening ceremony		
09.35-10.25	Plenary Session: Keynote Lecture 1		
10.25-11.15	Plenary Session: Keynote Lecture 2		
11.15-11.45	Coffee break		
11.45-13.15	Parallel Sessions. PS1.1	Parallel Sessions. PS1.2	Parallel Sessions. PS1.3
13.15-14.15	Lunch		
14.15-16.30	Parallel Sessions. PS2.1	Parallel Sessions. PS2.2	Parallel Sessions. PS2.3
16.30-17.00	Coffee break		
17.00-18.15	Plenary Session - 7th Bishop Lecture		
18.30-20.00	Welcome reception		

Day 2: 5th September

	Auditorium	Amphitheatre B032	Amphitheatre B035
09.00-09.55	Plenary Session: Keynote Lecture 3		
10.00-11.15	Parallel Sessions. PS3.1	Parallel Sessions. PS3.2	Parallel Sessions. PS3.3
11.15-11.45	Coffee break		
11.45-12.45	Parallel Sessions. PS4.1	Parallel Sessions. PS4.2	Parallel Sessions. PS4.3
12.30-13.30	TC101 Meeting (room G129, members only) | Guided tour to the Geotechnical Laboratory of FEUP (LabGEO)		
13.15-14.15	Lunch		
14.15-16.15	Parallel Sessions. PS5.1	Parallel Sessions. PS5.2	Parallel Sessions. PS5.3
16.15-16.45	Coffee break		
16.45-17.35	Plenary Session: Keynote Lecture 4		
17.35-18.30	Plenary Session: Keynote Lecture 5		
20.00-23.00	Gala dinner		

Day 3: 6th September

	Auditorium	Amphitheatre B032	Amphitheatre B035
09.00-09.55	Plenary Session: Early-Career Lectures		
10.00-11.15	Parallel Sessions. PS6.1	Parallel Sessions. PS6.2	Parallel Sessions. PS6.3
11.15-11.45	Coffee break		
11.45-13.15	Parallel Sessions. PS7.1	Parallel Sessions. PS7.2	Parallel Sessions. PS7.3
13.15-14.30	Lunch		
14.30-15.45	Parallel Sessions. PS8.1	Parallel Sessions. PS8.2	Parallel Sessions. PS8.3
15.45-16.40	Plenary Session: Keynote Lecture 8		
16.45-17.00	Closing ceremony		
17.00-18.00	Farewell drinks		

DETAILED PROGRAMME

day 1: Monday, 4th September 2023

AUDITORIUM | Plenary Sessions

09.00 - 09.20	**Opening Ceremony** **IS-Porto 2023 Chairman:** António Viana da Fonseca **ISSMGE Representative** **TC 101 Chairman:** Matthew Coop **SPG President:** Alexandre Pinto **FEUP Dean** **CONSTRUCT Director:** Álvaro Cunha **IC Diretor:** Humberto Varum
09.20 - 09.35	**Musical performance** (Portuguese guitar & piano)
09.35 - 10.25	**Keynote Lecture 1: Investigating the Martian soil at the InSight landing site** **Lecturers:** Pierre Delage & Bernardo Caicedo **Session Moderator**: António Viana da Fonseca
10.25- 11.15	**Keynote Lecture 2: Micro to macro investigation of clays and soft rocks advising their constitutive modelling** **Lecturer:** Federica Cotecchia **Session Moderator**: António Viana da Fonseca

11.15 – 11.45 | Coffee-Break

day 1: Monday, 4th September 2023

AUDITORIUM | Parallel Session PS1.1 I.1) Advances in laboratory testing techniques: characterisation at small-strains

11.45 - 13.15 **Theme Lecture: Soil structure evaluation through elastic wave measurement**

Lecturer / Session Chair: Reiko Kuwano

Session Moderator: Luís Leal Lemos

ISDCG2023-28	Characterization of soil stiffness anisotropy at small strains based on phase velocities of shear waves measured by novel testing apparatus *Junming Liu, Masahide Otsubo, Reiko Kuwano*
ISDCG2023-22	Acoustic emissions during creep under triaxial compression ***Belinda Bock**, Stefan Vogt, Roberto Cudmani*
ISDCG2023-21	Influence of time on the small strain shear modulus of an allophanic volcanic ash ***Mukteshwar Gobin**, Noriyuki Yasufuku, Midori Watanabe, Guojun Liu, Ryohei Ishikura*
ISDCG2023-119	The interpretation of advanced triaxial tests for the assessment of small strain stiffness ***Apollonia Gasparre**, Matthew R. Coop*
ISDCG2023-126	Use of machine learning in determining Gmax from bender element tests *Wenzhang Xu, Truong Le*
ISDCG2023-144	Calibration and limitations of a fixed-partly fixed resonant column apparatus *Luke Rieman, Róisín M. Buckley, Simon Wheeler*

day 1: Monday, 4th September 2023

B032 | Parallel Session PS1.2

I.4) Data interpretation and geotechnical imaging

11.45 - 13.15 **Theme Lecture: Use of photogrammetry in laboratory soil testing for stress-strain characterisation**
Lecturer / Session Chair: Satoshi Nishimura

Session Moderator: Rafaela Cardoso

ISDCG2023-1	High-precision and high-accuracy stereophotogrammetric image analysis for small to large strain deformation measurement in triaxial apparatus ***Satoshi Nishimura***
ISDCG2023-20	Characterisation of the heterogeneity of a sand specimen in triaxial compression using X-ray CT and representative elementary volumes ***Selma Schmidt***, *Max Wiebicke, Ivo Herle*
ISDCG2023-62	A procedure to analyze a one dimensional compression test ***Jorge Abraham Díaz-Rodríguez***
ISDCG2023-168	Transient phase in shear zone formation in sands ***Sudhanshu Rathore***, *Abhijit Hegde, Tejas Gorur Murthy*
ISDCG2023-211	An evaluation of non-linear undrained behaviour in the moderate strain range for fine-grained soils ***Mair Beesley***, *Erdin Ibraim, Paul J. Vardanega*
ISDCG2023-229	Using X-ray micro CT imaging data to obtain particle morphology and soil fabric parameters *Ana Valverde*, ***Dharma Wijewickreme***

day 1: Monday, 4th September 2023

B035 | Parallel Session PS1.3

I.5) Multiscale problems in geomechanics (micro-to-macro strains)

11.45 - 13.15 **Theme Lecture: A pore-based approach to understanding the behaviour of clays**
Lecturer / Session Chair: Beatrice Baudet

Session Moderator: Matthew Coop

ISDCG2023-83	Clay micromechanics: experimental challenges and perspectives *Matteo Pedrotti, Anne-Catherine Dieudonne, Jelke Dijkstra, Guido Musso, Mahdia Hattab, Gioacchino (Cino) Viggiani*
ISDCG2023-87	Stress-dilatancy behaviour of calcareous sands ***Zenon Szypcio***
ISDCG2023-88	Natural state parameter for sand ***Katarzyna Dołżyk-Szypcio***
ISDCG2023-89	Sensitivity of G0 and stress-strain relation of geomaterials to grain shape and surface roughness *Masahide Otsubo, Yang Li, Reiko Kuwano*
ISDCG2023-108	Micromechanical observation of kinematics of sheared circular discs ***Usman Ali***, *Mamoru Kikumoto, Ying Cui, Matteo Ciantia, Marco Previtali*
ISDCG2023-65	Influence of particle crushing on the critical state line of rockfill materials ***Roberta Ventini***, *Stefania Lirer, Alessandro Flora, Claudio Mancuso*

13.15 – 14.15 | Lunch

day 1: Monday, 4th September 2023

AUDITORIUM | Parallel Session PS2.1

I.1) Advances in laboratory testing techniques: characterisation of sands

14.15 - 16.30 **Theme Lecture: New findings for angle of repose test for granular materials using imaging techniques**
Lecturer / Session Chair: Yukio Nakata
Session Moderator: António Topa Gomes

ISDCG2023-25 Fundamental study on the effect of grain size distribution on angle of repose
Shintaro Kajiyama, Yukio Nakata, Hitoshi Nakase

ISDCG2023-57 [GTJ SI paper] Dynamic mechanical analysis test for evaluating loose sands on a wide strain range. Application to the InSight mission on Mars
***Juliana Chaparro**, Juan-Pablo Castillo, Miguel Angel Cabrera, Bernardo Caicedo, Pierre Delage, Philippe Lognonné, Bruce Banerdt*

ISDCG2023-45 [GTJ SI paper] Measurement of dynamic and static properties of residual soil using a modified cyclic triaxial apparatus
***Zhuoyuan Cheng**, Eng Choon Leong*

ISDCG2023-12 Evaluation of non-uniformity of sandy soil specimens compacted in the field and laboratory using triaxial tests
***Yuichi Tomita**, Junichi Koseki*

ISDCG2023-5 A simplified cyclic shear test for pore water pressure build-up of different soils
***Božana Baćić**, Ivo Herle*

ISDCG2023-194 Sand liquefaction in simple shear tests
Valentina Lentini, Francesco Castelli, Alessandra Di Venti

ISDCG2023-102 Use of computer vision to analyze cyclic loads on the Guamo sand
Diego Gil, Cristhian Mendoza, Luis Vásquez-Varela

ISDCG2023-64 Impact of specimen preparation on erosion and post-erosion response of gap-graded soils
***Meysam Mousavi**, Amirhassan Mehdizadeh, Mahdi M. Disfani*

ISDCG2023-39 Observation of the effect of soil-structure boundaries using transparent soil technology
***Guo Yu**, Yubo Li, Ying Cui, Lei He*

day 1: Monday, 4th September 2023

B032 | Parallel Session PS2.2

I.2) Advances in field testing and monitoring techniques & I.3) Advanced sampling

14.15 - 16.30 **Theme Lecture: Soil sampling: a thermo-hydro-mechanical process often overlooked**
Lecturer / Session Chair: Jubert Pineda
Session Moderator: Carlos Rodrigues

ISDCG2023-230 Numerical simulation of soil structure damage upon sampling
*Lluis Monforte, **Marcos Arroyo**, Antonio Gens*

ISDCG2023-109 Disturbance of sand samples obtained by piston samplers and ground freezing
Santiago Quinteros, Antonio Carraro, Jean-Sébastien L'Heureux, Anne-Lise Berggren

ISDCG2023-186 Laboratory evaluation of sampling quality of a new A+ sampler for natural fine soils
*Sonia Fanelli, **Philippe Reiffsteck**, Franck Pilnière, Fabrice Jadé, Jérôme Mauxion, Jérôme Rebour*

ISDCG2023-163 Medusa SDMT testing at the Onsøy Geo-Test Site, Norway
*Paola Monaco, Anna Chiaradonna, Diego Marchetti, **Sara Amoroso**, Jean-Sébastien L'Heureux, Thi Minh Hue Le*

ISDCG2023-216 Least-Squares evaluation of DMT dissipation test data – some preliminary results
Emőke Imre, Diego Marchetti, Miklos Juhasz, Lachlan Bates, Stephen Fityus

ISDCG2023-217 The short DMTA dissipation test
Emőke Imre, Diego Marchetti, Miklós Juhász, Lachlan Bates, Stephen Fityus, Vijay P. Singh

ISDCG2023-173 In-situ material damping measurements using the crosshole seismic method
***Sungmoon Hwang**, Kenneth H. Stokoe*

ISDCG2023-223 Measurement of subgrade soil permanent deformations under repeated loadings during simple in-situ test
Dina Kuttah

ISDCG2023-40 Early warning of shallow landslides: monitoring of pre-failure suction-induced deformation
***Lucia Coppola**, Alfredo Reder, Alessandro Tarantino, Giovanni Mannara, Luca Pagano*

day 1: Monday, 4th September 2023

B035 | Parallel Session PS2.3 — II.1) Constitutive modelling of geomaterials

14.15 - 16.30 **Theme Lecture: Experiments and modelling: an intertwined interaction**
Lecturers / Session Chairs: Andrea Diambra & Erdin Ibraim
Session Moderator: Paulo Coelho

ISDCG2023-9	Investigation of coated hydrophobic granular materials by means of computed tomography and environmental scanning electron microscopy ***Clara Magalhães Toffoli***, *Marius Milatz, Jürgen Grabe*
ISDCG2023-10	State-dependent dilatancy of sand based on hollow cylinder laboratory tests under shear strain cycles ***Lukas Knittel***, *Merita Tafili*
ISDCG2023-73	Simplified modelling of full-strain-range non-linearity of cyclically loaded undrained clays *Maosong Huang, He Cui,* ***Zhenhao Shi****, Jian Yu*
ISDCG2023-114	Performance evaluation of the Generalized Bounding Surface Model in the simulation of Cajicá clay subjected to monotonic loading ***Ricardo González-Olaya***, *Javier Camacho-Tauta, Fausto Molina-Gómez*
ISDCG2023-152	Effect of soil-pile contact parameters on pile bearing capacity value *Darym Campos, Thiago Morandini, Stéphanie Ferreira, José Camapum, André Cavalcante, Luan Ozelim*
ISDCG2023-180	Clay micromechanics: Numerical modelling of electrical double-layer interactions to develop particle-based models for clay ***Angela Casarella***, *Alice Di Donna, Claire Chassagne, Alessandro Tarantino*
ISDCG2023-212	Comparison of simple stress-strain models in the moderate strain range for fine-grained soils: A review ***Mair Beesley***, *Erdin Ibraim, Paul J. Vardanega*
ISDCG2023-107	Investigation of thermal effects on the saturated shear behaviour of a clayey sand-structure interface *She-qiang Cui,* ***Chao Zhou****, Hamed Sadeghi*
ISDCG2023-115	Temperature-dependent elastic shear modulus of a saturated lateritic clay *Obed Takyi Bentil,* ***Chao Zhou****, Daniel Peprah-Manu, Damilola Bashir Akinniyi*

16.30 – 17.00 | Coffee-Break

day 1: Monday, 4th September 2023

AUDITORIUM | Plenary Session

17.00 - 17.15 **In Memoriam of Michele Jamiolkowski**

17.15 - 18.15 **7th Bishop Lecture: The mechanics of coarse grained geomaterials at meso- and micro-scales**
Honorary Lecturer: Matthew Richard Coop
Session Moderator: Erdin Ibraim

18.30 – 19.00 | Musical Performance by “Tuna Feminina da FEUP”

19.00 – 20.00 | Welcome reception (Central Lawn of FEUP)

day 2: Tuesday, 5th September 2023

AUDITORIUM | Plenary Session

09.00 - 09.55 **Keynote Lecture 3: Measuring stress, strain and force transfer in granular materials from intragranular to bulk scales**

Lecturer: Stephen Hall

Session Moderator: Cino Viggiani

day 2: Tuesday, 5th September 2023

AUDITORIUM | Parallel Session PS3.1

II.2) Physical and numerical modelling

10.00 - 11.15 **Theme Lecture: Fundamental mechanics of the Atterberg limits**
Lecturer / Session Chair: Stuart Haigh

Session Moderator: Mafalda Lopes Laranjo

ISDCG2023-37 Linking sand permeability anisotropy to fabric anisotropy via numerical simulation
Tokio Morimoto, Catherine O'Sullivan, David Taborda

ISDCG2023-53 Isotropic compression simulation of kaolinite using coarse-grained molecular dynamics
Yohei Nakamichi, Catherine O'Sullivan, Stefano Angioletti-Uberti, Paul Tangney, Sara Bandera

ISDCG2023-197 Discrete modelling of the mechanical response of Cuxhaven sand under shear and oedometric conditions using the rolling resistance contact model
***Anjali Uday**, Andrés Alfonso Peña-Olarte, Yuting Wang*

ISDCG2023-78 Clay micromechanics: mapping the future of particle-scale modelling of clay
Arianna Gea Pagano, Fernando Alonso-Marroquin, Katerina Ioannidou, Farhang Radjai, Catherine O'Sullivan

ISDCG2023-209 The sensitivity of Prazeres clay – some results on reconstituted samples
***Mafalda Lopes Laranjo**, Manuel Matos Fernandes*

day 2: Tuesday, 5th September 2023

B032 | Parallel Session PS3.2

II.9) Sensitive and liquefiable soils: tailings and other highly brittle strain-softening soils

10.00 - 11.15 **Theme Lecture: An energetic interpretation of the liquefaction behaviour of saturated and gassy sands**
Lecturer / Session Chair: Lucia Mele

Session Moderator: Fausto Molina-Gómez

ISDCG2023-15 The apparent viscosity to model the behaviour of liquefied sands
*Lucia Mele, **Stefania Lirer**, Alessandro Flora*

ISDCG2023-16 [GTJ SI paper] Experimental investigation on the post-liquefaction behaviour of sands in simple shear conditions
***Lucia Mele**, Stefania Lirer, Alessandro Flora*

ISDCG2023-61 [GTJ SI paper] Wave-based assessment of liquefaction resistance for different degrees of saturation
***Fausto Molina-Gómez**, Antonio Viana da Fonseca, Cristiana Ferreira, Bernardo Caicedo*

ISDCG2023-75 Shear-induced permeability anisotropy in liquefiable sands
José Salomón, Fernando Patino-Ramirez, Catherine O'Sullivan

ISDCG2023-106 Applicability of shear wave velocity to evaluate state of granular materials with fines
***Mirosław J. Lipiński**, Małgorzata Wdowska, Intan Puspitaningrum*

day 2: Tuesday, 5th September 2023

B035 | Parallel Session PS3.3

II.3) Anisotropy and localisation & II.4) Time-dependent response

10.00 - 11.15 **Theme Lecture: Influence of structure on the time-dependent response of stiff high-plasticity clays**

Lecturer / Session Chair: Kenny Kataoka Sørensen

Session Moderator: Elisabete Costa Esteves

ISDCG2023-56 [GTJ SI paper]
Characterisation of the rate dependent behaviour of a high plasticity stiff sedimentary clay
Kenny Sørensen, Victor Kirchberg Hvoldal Nielsen, Astrid Rehné Mikkelsen, Hans Henning Stutz

ISDCG2023-42
Anisotropy and cyclic loading characteristics of a stiff Bolders Bank glacial till at Cowden
***Tingfa Liu**, Emil Ushev, Richard J. Jardine*

ISDCG2023-111
Delayed compression and breakage of crushed mudstones due to the drying/wetting and temperature cycles
***Mohamed Nihaaj**, Takashi Kiyota, Masataka Shiga, Toshihiko Katagiri*

ISDCG2023-222
Rheological behavior of granular materials under different relative densities
***Jithin S Kumar**, Ramesh Kannan Kandasami*

ISDCG2023-33
Shear strength and compressibility of reconstituted Boom clay, a stiff clay from the Paleogene
***Daniel R. Verastegui-Flores**, Joren Andries, Eveline Lamont, An Baertsoen*

11.15 – 11.45 | Coffee-Break

day 2: Tuesday, 5th September 2023

AUDITORIUM | Parallel Session PS4.1

II.2) Physical and numerical modelling

11.45 - 12.45 **Session Chair:** Stuart Haigh | **Session Moderator:** Mafalda Lopes Laranjo

ISDCG2023-8
Numerical modeling of under-reamed scaled-down piles by water jet driving
Cesar Alberto Ruver

ISDCG2023-34
Centrifuge modelling of monotonic and cyclic lateral responses of monopiles in quartz and carbonate sands
***Márcio de Sousa Soares de Almeida**, Maria Fernanda Wamser Barra, Naiala Fidelis Gomes, José Wedney Pereira Gomes, Maria Cascão Ferreira de Almeida, Marcos Massao Futai*

ISDCG2023-36
Mesoscale FEM approach on cemented sands: generating and testing the digital twin
***Michail Komodromos**, Olga Stamati, Jürgen Grabe*

ISDCG2023-41
Using shear modulus to predict the bearing capacity of strip foundations on sand
Ruan Andrew Murison, Gerhard Heymann

ISDCG2023-76
Laboratory testing and model calibration of a crushed stone backfill in a geosynthetic reinforced soil wall
Chukwuma Okafor, Sam Dunlop, Brian Anderson, Jack Montgomery

ISDCG2023-225
Subsoil stiffness effects on the bridge-abutment dynamic behaviour
***Yazan B. Asia**, Gopal S.P. Madabhushi*

day 2: Tuesday, 5th September 2023

B032 | Parallel Session PS4.2

I.1) Advances in laboratory testing techniques: characterisation of unsaturated soils

11.45 - 12.45 **Session Chair:** Lucia Mele | **Session Moderator:** Fausto Molina-Gómez

ISDCG2023-3 [GTJ SI paper]	Triaxial testing methodology for gassy soils ***Pauline Kaminski***, *Jürgen Grabe*
ISDCG2023-95	A fully automated unsaturated triaxial device for testing of soils under complicated hydromechanical stress paths *Seyed Mohsen Haeri, Saman Soleymani Borujerdi, Amir Akbari Garakani*
ISDCG2023-177	Comparative study on suction obtained using the membrane filter method from triaxial apparatus and pressure plate apparatus *Bhargavi Chowdepalli, Kenji Watanabe*
ISDCG2023-232	Investigation on the effect of intermediate principal stress on shear behaviour of unsaturated soils *Fardin Jafarzadeh, Amirsajjad Poorakbar, Mahdi Moghayad*
ISDCG2023-236	Determine the yield curve for unsaturated soils using a novel test approach *Sara Fayek,* ***Xiong Zhang***

day 2: Tuesday, 5th September 2023

B035 | Parallel Session PS4.3

I.1) Advances in laboratory testing techniques: characterisation of clays

11.45 - 12.45 **Session Chair:** Kenny Kataoka Sørensen | **Session Moderator:** Elisabete Costa Esteves

ISDCG2023-47	Effects of geometry of soil specimens on formation of desiccation cracks ***Yew Heng Sherman Seah***, *Eng Choon Leong*
ISDCG2023-113	Applicability and comparison of multistage triaxial compression test procedures on reconstituted Ankara clay *Amirahmad Vakilinezhad, Kartal Toker*
ISDCG2023-18	A device to measure apparent swelling pressure of compacted bentonite using extremely thin specimen ***Hailong Wang***
ISDCG2023-4	Apparatus for swelling deformation of compacted bentonite utilizing multi-ring moulds for evaluation of dry density and water content distribution *Daichi Ito, Hailong Wang, Hideo Komine*
ISDCG2023-153	Evolution of excess pore water pressure in undrained clay-structure interface shear tests *Alejandro Martinez, Hans Henning Stutz*

12.30 - 13.30 | TC101 Meeting (room G129, TC members only) | Guided tour to the Geotechnical Laboratory of FEUP

13.15 – 14.15 | Lunch

day 2: Tuesday, 5th September 2023

AUDITORIUM | Parallel Session PS5.1

II.7) Thermal behaviour & II.10) Frozen soils

14.15 – 16.15 **Theme Lecture: An insight into the thermo-hydro-mechanical behavior of frozen soils**
Lecturer / Session Chair: Francesca Casini
Session Moderator: Marcos Arroyo

ISDCG2023-117 Freezing-thawing response of sand-kaolin mixtures in oedometric conditions
Andrea Viglianti, *Giulia Guida, Francesca Casini*

ISDCG2023-50 An interpretation of thermo-mechanical behaviour of peat under 1-D compression
Taishi Kouchi, Satoshi Nishimura, Nobutaka Yamazoe

ISDCG2023-103 Frozen soils properties modification in the context of global warming
Jérémy Torche*, Erika Prina Howald*

ISDCG2023-176 Thermo-hydro-mechanical behaviour of deep Ypresian clays
Núria Sau*, Enrique Romero, Hervé Van Baelen*

ISDCG2023-188 Assessing the potential of using geothermal energy in buildings: parametric analysis
Batool Ajeeb, ***António Figueiredo****, Kamar Aljundi, Ana Vieira, Claudino Cardoso, Raoof Gholami*

ISDCG2023-195 A systematic approach for conducting and interpreting hydraulic conductivity tests on granular soils under non-isothermal conditions
Marina S. Bortolotto*, David M. G. Taborda, Catherine O'Sullivan*

ISDCG2023-118 2T3C apparatus and DIC technology to investigate the thermomechanical behaviour of the interface between bituminous layers
Thien Nhan Tran*, Salvatore Mangiafico, Cédric Sauzéat, Hervé Di Benedetto*

ISDCG2023-237 Continuous soil deformation measurement and tracking during triaxial testing
Xiaolong Xia, ***Xiong Zhang***

ISDCG2023-66 Preliminary findings on the experimental investigation of the small-strain behaviour of Pizzoli silty sand
Anna Chiaradonna*, Paola Monaco*

day 2: Tuesday, 5th September 2023

B032 | Parallel Session PS5.2

II.6) Soil stabilisation and improvement: cemented soils

14.15 – 16.15 **Theme Lecture: Resilient moduli characterization of chemically treated soils**
Lecturer / Session Chair: Anand Puppala
Session Moderator: António Alberto Correia

ISDCG2023-167 Resilient moduli characterization of cement-treated silt
Prince Kumar, ***Anand J. Puppala****, Surya Sarat Chandra Congress, Jeb S. Tingle*

ISDCG2023-85 Evaluation of saturation in cemented slags with P-wave velocities
Sara Rios*, Nelson Mica, António Viana da Fonseca*

ISDCG2023-26 Assessing the mechanical properties of a cemented sand focusing on experimental and theoretical studies
Marina Bellaver Corte*, Lucas Festugato, Nilo Cesar Consoli, Erdin Ibraim, Andrea Diambra*

ISDCG2023-70 A review of mix design terminologies for cement admixed sandy clay
Sathya Subramanian, Qasim Khan, Sung-Woo Moon, ***Taeseo Ku***

ISDCG2023-72 Impact of weathering on a cement-treated sand
Alice Wassermann, Adel Abdallah, ***Olivier Cuisinier***

ISDCG2023-59 Direct shear characteristics of cement stabilized clay subjected to previous shear
Masaki Kitazume, Kiyonobu Kasama, Tomorou Ueda

ISDCG2023-77 In situ ageing of a lime/cement-treated expansive clayey soil
Nicolas Chabrat, ***Olivier Cuisinier****, Farimah Masrouri*

ISDCG2023-208 Indirect verification of suction in cyclic UCS tests of a chemically stabilized soil
Ligia A. Martins, António A.S. Correia, Paulo J. Venda Oliveira, Luís J. L. Lemos

ISDCG2023-31 Investigation of shear band strengthening by using different strengthening criteria
Elnaz Hadjiloo*, Jürgen Grabe*

day 2: Tuesday, 5th September 2023

B035 | Parallel Session PS5.3 III.1) Integrated site characterization & III.3) Field monitoring and observational method

14.15 – 16.15 **Theme Lecture: On the evaluation of useful geotechnical design parameters from different and combined geophysical techniques**

Lecturer / Session Chair: Victor Rinaldi

Session Moderator: Nuno Cruz

ISDCG2023-104 Application of seismic refraction tomography for detecting a hidden potential fault
Victor Rinaldi

ISDCG2023-105 Evaluation of wet front under foundation at "El Chocón dam" using electrical tomography
Victor Rinaldi, Fabian Restelli, Jose Ignacio Rinaldi

ISDCG2023-2 An automated system for determining soil parameters: Case study
Islam Marzouk, *Simon Oberhollenzer, Franz Tschuchnigg*

ISDCG2023-14 Multivariate probabilistic assessment of a regional database in Copenhagen
Efthymios Panagiotis, Irene Rocchi, Varvara Zania

ISDCG2023-44 CPT-based design of pile foundations in sand and clay: perspectives
Venkata Abhishek Sakleshpur, ***Monica Prezzi****, Rodrigo Salgado*

ISDCG2023-137 Effect of soil structuring on stiffness evaluated by triaxial and seismic flat dilatometer tests
Carlos Rodrigues*, Nuno Cruz, Jorge Almeida e Sousa, Luís Leal Lemos*

ISDCG2023-143 An innovative experimental device for characterizing the responses of monopiles subjected to complex lateral loading
Zitao Zhang, Wei Wang, Xuedong Zhang, Guangming Yu, Jing Hu

ISDCG2023-165 Constrained modulus of fine-grained soils from in situ-based correlations and comparison with laboratory tests
Luisa Dhimitri*, John Powell*

ISDCG2023-199 Some practical applications of shear wave velocity measurements in dense sand
Mike Long, Andrew Trafford, ***Maria Judge****, Shane Donohue*

16.15 – 16.45 | Coffee-Break

day 2: Tuesday, 5th September 2023

AUDITORIUM | Plenary Sessions

16.45 – 17.35 **Keynote Lecture 4: Recent developments in the experimental characterisation of freezing and thawing ground**

Lecturer: Giulia Viggiani

Session Moderator: Cristiana Ferreira

17.35 – 18.30 **Keynote Lecture 5: Soil testing at different scales: from micro-experiments to mock-ups**

Lecturer: Enrique Romero

Session Moderator: Cristiana Ferreira

20.00 – 23.00 | Gala dinner (Pousada Palácio do Freixo)

day 3: Wednesday, 6th September 2023

AUDITORIUM | Plenary Session

09.00 - 09.55

Early-Career Lecture 1: A micro-scale insight into the thermo-mechanical behaviour of soils in the framework of energy geostructures

Lecturer: Alice Di Donna

Session Moderator: Satoshi Nishimura

Early-Career Lecture 2: In-situ and laboratory characterisation of stiff and dense geomaterials for driven pile analysis and design

Lecturer: Tingfa Liu

Session Moderator: Satoshi Nishimura

day 3: Wednesday, 6th September 2023

AUDITORIUM | Parallel Session PS6.1

II.5) Cyclic and dynamic behaviour

10.00 - 11.15

Theme Lecture: Small-strain stiffness of liquefiable sands: a comparison between bender elements and resonant-column tests
Lecturer / Session Chair: Javier Camacho-Tauta

Session Moderator: Rolando Orense

ISDCG2023-13 Liquefaction behaviour of aluminium and plastic rod assemblies using bi-axial apparatus with application of image analysis
Rawiwan Sukhumkitcharoen, *Junichi Koseki, Hiroyuki Kyokawa, Masahide Otsubo*

ISDCG2023-79 Relation between liquefaction resistance and shear modulus of crushable volcanic soils
Mohammad Bagher Asadi, ***Rolando Orense****, Mohammad Sadeq Asadi*

ISDCG2023-190 Behaviour of saturated sand under cyclic loading: model approach with experimental validation
Jotheeshwar Velayudham*, David Airey, Amirabbas Mohammadi, Javad Ghorbhani*

ISDCG2023-234 Exploring the role of fabric anisotropy in cyclic liquefaction resistance under non-hydrostatic consolidation: insights from DEM analysis
Ming Yang, ***Mahdi Taiebat***

ISDCG2023-69 [GTJ SI paper] Experimental investigation on shear behavior of partially saturated silty soil under constant water content and constant void ratio conditions
Tufail Ahmad*, Riko Kato, Jiro Kuwano*

day 3: Wednesday, 6th September 2023

B032 | Parallel Session PS6.2

II.9) Sensitive and liquefiable soils: tailings and other highly brittle strain-softening soils

10.00 - 11.15

Theme Lecture: How loose a state can slurry-deposited silt tailings achieve?
Lecturer / Session Chair: David Reid

Session Moderator: Bruno Guimarães Delgado

ISDCG2023-132 Linking laboratory quasi-steady state strengths to field scale performance of tailings
David Reid, ***Riccardo Fanni****, Andy Fourie*

ISDCG2023-116 [GTJ SI paper] Uniqueness of the normal consolidation line for gold tailings
Yashay Narainsamy, SW Jacobsz, Ruan Murison, Nicolaas Vermeulen

ISDCG2023-128 The influence of stress-induced anisotropy in undrained yield and ultimate shear strengths in brittle loose deposited silts
António Viana da Fonseca, Fausto Molina-Gómez, ***Davide Besenzon****, Daniela Coelho*

ISDCG2023-127 Influence of initial compaction and confining pressure on the hydraulic conductivity of compacted iron ore tailings
Roberto Aguiar dos Santos, Bruno Guimarães Delgado, Ana Luisa Cezar Rissoli, João Paulo de Sousa Silva, Michéle Dal Toé Casagrande

ISDCG2023-201 The effect of key parameters on the mechanical response of artificially cemented iron ore tailings for dry stacking purposes
Nilo Cesar Consoli, Bruno Guimarães Delgado, João Paulo Sousa Silva, Hugo Carlos Scheuermann Filho

day 3: Wednesday, 6th September 2023

B035 | Parallel Session PS6.3

II.6) Soil stabilisation and improvement

10.00 - 11.15 **Theme Lecture: When sediments meet shells: a nice geotechnical story to tell**
Lecturer / Session Chair: Claudia Vitone
Session Moderator: Sara Rios Silva

ISDCG2023-74 On the use of seashells as green solution to mechanically stabilise dredged sediments
Rossella Petti, *Claudia Vitone, Maurizio Iler Marchi, Michael Plötze, Alexander M. Puzrin*

ISDCG2023-215 Effect of fibre orientation on the mechanical response of reinforced sand, detected with x-ray tomography
Michela Arciero, *Erminio Salvatore, Alessandro Tengattini, Giuseppe Modoni, Gioacchino Viggiani*

ISDCG2023-58 Effect of vegetation on the hydro-mechanical properties of the vadose zone
Floriana Anselmucci, *Hongyang Cheng, Xinyan Fan, Yijian Zeng, Vanessa Magnanimo*

ISDCG2023-100 Root-induced changes in the hydraulic properties of a fine slope cover
Vito Tagarelli, *Nico Stasi, Federica Cotecchia, Francesco Cafaro*

ISDCG2023-55 Proposed structural and functional evaluation of unpaved roads improved with geosynthetics, reclaimed asphalt pavement and Portland cement
Luiz Heleno Albuquerque Filho, Michéle Dal Toé Casagrande, Luís Fernando Martins Ribeiro

11.15 – 11.45 | Coffee-Break

day 3: Wednesday, 6th September 2023

AUDITORIUM | Parallel Session PS7.1

II.5) Cyclic and dynamic behaviour

11.45 - 13.15 **Session Chair:** Javier Camacho-Tauta | **Session Moderator:** Rolando Orense

ISDCG2023-99 [GTJ SI paper] Cyclic behaviors of anisotropically consolidated gravelly soils under triaxial condition - effects of sand gradation part of the soil
Seyed Mohsen Haeri, ***Khashayar Nikoonejad***

ISDCG2023-11 Determination of hypoplastic parameters for a typical gravel backfill material of railway bridges
Alexander Stastny, *Lukas Knittel, Thomas Meier, Franz Tschuchnigg*

ISDCG2023-19 Dynamic shear modulus and damping ratio of recycled concrete aggregate-recycled tire waste mixture using resonant column apparatus
Katarzyna Gabryś, *Wojciech Sas*

ISDCG2023-27 Small-strain shear stiffness of sand-gravel mixtures
Abilash Pokhrel, Gabriele Chiaro

ISDCG2023-32 Effects of cyclic loading on soil-geogrid interaction characteristics
Fernanda Bessa Ferreira, *Castorina S. Vieira, Maria de Lurdes Lopes, Pedro Gil Ferreira*

ISDCG2023-63 Soft-rigid granular mixtures: role of particle shape and rolling resistance in response under compressive loads
Mehdi Alam, *Arghya Das, Mahdi M. Disfani*

ISDCG2023-43 Laboratory investigation of the cyclic loading behaviour of intact and de-structured chalk
Tingfa Liu, *Reza Ahmadi-Naghadeh, Ken Vinck, Richard J. Jardine, Stavroula Kontoe, Róisín M. Buckley, Byron W. Byrne, Ross A. McAdam*

ISDCG2023-121 A comparison between static and dynamic load tests of Tapered steel jacking piles in Baskarp sand
Junyu Zhou, *Yimo Wu, Lars Bo Ibsen, Amin Barari*

day 3: Wednesday, 6th September 2023

B032 | Parallel Session PS7.2

II.9) Sensitive and liquefiable soils: tailings and other highly brittle strain-softening soils

11.45 - 13.15 **Theme Lecture: Potential brittle behaviour of tailings slopes from field monitoring and centrifuge modelling**
Lecturer: SW Jacobsz

Session Chair: David Reid | **Session Moderator:** Nuno Raposo

ISDCG2023-139 Quality of reconstituted tailings samples based on their mechanical response
João Pedro Oliveira, Paulo Coelho, Luis Araújo Santos

ISDCG2023-156 Adaptations to a triaxial equipment for testing of mine tailings
***Nuno Raposo**, Roberto Olivera, Ricardo Bahia, António Topa Gomes*

ISDCG2023-200 On the behaviour of compacted filtered iron ore tailings submitted to high pressures
João Paulo Silva, João Vítor Carvalho, Alexia Cindy Wagner, Nilo Cesar Consoli

ISDCG2023-202 Shear response of iron ore tailings under monotonic loadings
*Guilherme Schmitt Medina, Helena Portela Farenzena, Bráulio Araújo Rodrigues, João Paulo Silva, **Lucas Festugato**, Nilo Cesar Consoli*

ISDCG2023-219 Monotonic and cyclic behaviour of sand-silt mixtures through the equivalent state parameter
Anthi Papadopoulou, Theodora Tika

ISDCG2023-151 Safety assessment in dams due to downstream slope anomalies
Thiago Morandini, Darym Campos, Stéphanie Ferreira

day 3: Wednesday, 6th September 2023

B035 | Parallel Session PS7.3

II.6) Soil stabilisation and improvement

11.45 - 13.15 **Session Chair:** Claudia Vitone | **Session Moderator:** Sara Rios Silva

ISDCG2023-145 [GTJ SI paper] An examination of the effect of chemically induced damage on the monotonic and cyclic shearing behavior of biocemented sands
***Bruna Ribeiro**, Minyong Lee, Michael Gomez*

ISDCG2023-147 Shear wave velocities to monitor curing evolution of soils treated with alkali activated binders
***Sara Rios**, Isabela Caetano, Claver Pinheiro, António Viana da Fonseca*

ISDCG2023-101 Influence of the coefficient of uniformity on bio-cemented sands: a microscale investigation
Marlee Reed, Brina Montoya

ISDCG2023-112 Stiffness moduli in triaxial tests on a loess-sand mixture
***Matylda Tankiewicz**, Magdalena Kowalska*

ISDCG2023-141 Laboratory study of a kaolinitic soil and sodium hydroxide interaction mechanisms and resulting swelling stresses
Thiago Paulo da Silva, Francisco José Casanova de Oliveira e Castro, Paulo Eduardo Lima de Santa Maria, Maria Claudia Barbosa

ISDCG2023-231 Sand and silt treatment with novel binders
*Giovanni Spagnoli, Alessandro Fraccica, **Marcos Arroyo**, Enrique Romero*

ISDCG2023-233 Stabilization of an iron ore tailings coproduct with perlite waste geopolymer
Gabriella Melo de Deus Vieira, Michéle Dal Toé Casagrande, Roberto Aguiar dos Santos

13.15 – 14.30 | Lunch

day 3: Wednesday, 6th September 2023

AUDITORIUM | Parallel Session PS8.1

I.1) Advances in laboratory testing techniques: non-textbook soils

14.30 - 15.45 **Theme Lecture: Understanding the effect of individual particle properties on soil behavior using 3D printed soils**
Lecturer / Session Chair: Alejandro Martinez
Session Moderator: Nilo Consoli

ISDCG2023-154 Gradation and state effects on the strength and dilatancy of coarse-grained soils
S. Sharif Ahmed, Alejandro Martinez, Jason DeJong

ISDCG2023-235 Interfacial characterization of soil-3D printing materials
***Sina Fadaie**, Moura Mehravar, David John Webb*

ISDCG2023-110 Effect of large particle content on strength and failure mode of binary granular mixture in shear under plane strain condition
***Masato Taue**, Yukio Nakata, Shintaro Kajiyama*

ISDCG2023-174 Air permeability measurements in low porosity clayey rocks
Jubert Pineda, Hoang Viet Nguyen, Enrique Romero, Daichao Sheng, Antonio Gens

ISDCG2023-184 The monotonic behaviour of a low- to medium-density chalk through in situ and laboratory characterisation
***Ken Vinck**, Tingfa Liu, Richard Jardine, Stavroula Kontoe, Róisín Buckley, Byron Byrne, Ross McAdam, Pedro Ferreira, Matthew Coop*

day 3: Wednesday, 6th September 2023

B032 | Parallel Session PS8.2

II.6) Soil stabilisation and improvement

14.30 - 15.45 **Theme Lecture: Miniaturized devices to help investigating biocementation processes**
Lecturer / Session Chair: Rafaela Cardoso
Session Moderator: Castorina Vieira

ISDCG2023-227 Towards a monitoring tool to quantify urease during biocementation treatment at microscale
Inês Borges, Débora C. Albuquerque, Susana Cardoso, Rafaela Cardoso

ISDCG2023-228 Development of tools to investigate biocementation - microscale analysis for studying bacterial solutions
Mariana Pinto, Rafaela Cardoso

ISDCG2023-91 Pore-scale precipitation pattern and grain-scale cementation strength by microbially induced calcium carbonate precipitation (MICP)
Tae-Hyuk Kwon, Soo-Min Ham, Seung-Hun Baek, Gyeol Han, Alejandro Martinez, Jason DeJong

ISDCG2023-120 Experimental evidences of bio-chemo-mechanical processes in contaminated sediments
***Francesca Sollecito**, Michael Plötze, Alexander M. Puzrin, Claudia Vitone, Federica Cotecchia*

ISDCG2023-187 Deformations of bentonite-sand mixture without lateral confining pressure subject to high suctions changing
Tomoyoshi Nishimura

day 3: Wednesday, 6th September 2023

B035 | Parallel Session PS8.3

II.8) Non-textbook soils

14.30 - 15.45 **Theme Lecture: Fabric-Sensitive Soil Mechanics: experimental insights**
Lecturer / Session Chair: Antonio Carraro
Session Moderator: David Airey

ISDCG2023-138 [GTJ SI paper] Soil structure in volcanic pumice soil of Dozou-Sawa River evaluated from in-situ and laboratory tests
Hiroyuki Hashimoto, Koki Horinouchi, Makoto Kuno, Itsuki Sato, Reiko Kuwano

ISDCG2023-136 Contractancy and shear behavior of extremely loose structure soils with particle breakage in saturated and unsaturated conditions
Itsuki Sato, Reiko Kuwano, Masahide Otsubo

ISDCG2023-157 Investigation of diatomaceous sand using elastic and electromagnetic waves in oedometer tests
Ngoc Quy Hoang, Sang Yeob Kim, Dongsoo Lee, Jong-Sub Lee

ISDCG2023-140 Physical and mechanical characteristics of a pyroclastic soil for the construction of embankments
*Anna D'Onofrio, **Roberta Ventini**, Filippo Santucci de Magistris*

day 3: Wednesday, 6th September 2023	
AUDITORIUM | Plenary Session	
15.50 - 16.40	**Keynote Lecture 7: Emerging technologies and advanced analyses for non-invasive near-surface site characterization** Lecturers: Sebastiano Foti & Brady Cox **Session Moderator:** Kenneth H. Stokoe
16.45 – 17.00	**Closing Ceremony** **IS-Porto 2023 Chairman:** António Viana da Fonseca **TC 101 Chairman:** Matthew Coop **TC 101 Vice-Chair:** Erdin Ibraim **SPG Representative:** Castorina Vieira **Next IS Chairman or Representative**

17.00 – 18.00 | Farewell drinks

HONORARY, KEYNOTE & THEME LECTURERS

7th BISHOP LECTURER

MATTHEW RICHARD COOP
University College London, UK

Matthew has about 40 years research experience, concentrating on the behaviour of soils and weak rocks as revealed through high quality laboratory testing. Following industrial experience in offshore foundations and his Doctorate on the behaviour of offshore piles at Oxford University under the supervision of Peter Wroth he was a lecturer/senior lecturer at City University, London before moving to Imperial College in 2000, where he became professor in 2007. In 2010 Matthew moved to the City University of Hong Kong where he established a laboratory specialising in the micro-mechanics of soils returning to London in 2016 to University College. In 2003 he delivered the Géotechnique Lecture. He is the current chair of TC101 of the ISSMGE, for the laboratory testing of soils. He was the founding editor of Géotechnique Letters, the current editor in chief of Géotechnique and is the author of over 110 journal papers which have been awarded ten major research prizes.

KEYNOTE LECTURERS

PIERRE DELAGE
Laboratoire Navier – CERMES, École des Ponts ParisTech, France

Pierre Delage, Professor of Geotechnical Engineering at Ecole des Ponts ParisTech, graduated as a Civil Engineer from Ecole des Ponts and got a PhD in Engineering Geology from Ecole des Mines, Paris. He actively contributed, since 1983, to the start and development of CERMES (the geotechnical research group of Ecole des Ponts), that he directed from 2003 to 2010. He is member of the French Academy of Agriculture and of the InSight Science Team (InSight is a NASA geophysical mission on Mars). He has been Vice-President of the French Geotechnical Group (CFMS), Chief editor of the *Revue Française de Géotechnique* and *Géotechnique Letters*, Panel member of *Géotechnique* and of various other journals. As former Chair of the Technical Oversight Committee of the ISSMGE (2013 – 2022), he supervised the activities of their 37 Technical Committees. Within ISSMGE, Pierre Delage is now in charge of the Geo-Engineers without Borders group.
He developed researches on the fundamental mechanisms governing the response of multi-phase geomaterials submitted to changes in stress, water content and temperature (for sensitive clays, deep marine sediments, unsaturated soils, compacted soils, compacted bentonite, loess, oil reservoir chalks, oil sands, geosynthetic clay liners, shales and Martian regolith), with applications to earth-dams and embankments, deep geological radioactive waste disposal, offshore oil extraction, thermal behaviour of clays and claystones, soil contamination and seismic wave propagation. He co-authored 394 papers and communications in conferences, including 134 papers in journals and 24 invited/keynote lectures. He co-edited 12 special issues of journals or conferences proceedings, including the 1st Int. Conf. on Unsaturated Soils in Paris (1995), the 18th ICSMGE (Paris 2013) and the 3rd European Conference on Unsaturated Soils (Paris 2016), that he chaired.

Bernardo Caicedo, PhD, is a Full Professor in the Department of Civil and Environmental Engineering, Bogotá, Colombia. His research focuses on the mechanics of partially saturated soils, soil dynamics, the behavior of soft rocks, physical modeling in centrifuges and the behavior of road materials, among others. Bernardo Caicedo has received several awards such as the Camilo Torres Medal of the Universidad del Cauca, the Thomas Telford Prize in 2016 and the Bishop Medal of Research in Geotechnics in 2018; These last two prizes were awarded by the Institution of Civil Engineers, ICE, of the United Kingdom.

BERNARDO CAICEDO
Universidad Los Andes, Colombia

STEPHEN HALL
Lund University, Sweden

Stephen Hall is Associate Professor at the Department of Solid Mechanics at the Faculty of Engineering (LTH) since 2011 working primarily with experimental mechanics with a strong focus on geo- and granular-materials. Stephen has a degree and PhD in Geophysics (from Leeds University, UK) and, after a Postdoctoral position in 4D seismic imaging at Heriot-Watt University in Edinburgh, he moved to Laboratoire 3SR in Grenoble, France, to work on experimental geomechanics (with a Marie-Curie individual Fellowship). Stephen was subsequently recruited as a "Chargé de Recherche" with the CNRS. After 8.5 years in Grenoble, Stephen moved to Lund to join the Division of Solid Mechanics at the Faculty of Engineering (LTH). He was director of the Lund Institute for Advanced X-ray and Neutron Science (LINXS) through 2018-2021 and has been closely involved in the European Spallation Source and MaxIV synchrotron developments in Lund. Stephen works with a wide range of experimental methods, including extensively with x-rays and neutrons, to investigate deformation mechanisms in materials including the micro-scale origins of deformation and coupled processes. Key tools in his work include full-field measurements (2D and 3D) to characterise deformation mechanisms, x-ray, neutron and ultrasonic tomographies, digital image correlation/analysis and 3D x-ray and neutron diffraction.

FEDERICA COTECCHIA
Politecnico di Bari, Italy

Federica Cotecchia is Full professor in Geotechnical Engineering at the Technical University of Bari (Politecnico di Bari; Italy) since 2012. Her previous academic career included being Delegate of the Rector for the Quality Assessment of Teaching and Research at PoliBA within the evaluation framework issued by the Ministry of University (2013-2019). Since 2008, she is the Scientific Responsible of the Geotechnical Laboratory of PoliBA. In 1997, she was Visiting researcher at City University of London and in 1996-1997 and 1998-1999, at Imperial College of London. She was awarded PhD in Soil Mechanics at Imperial College of London (1996), Master of Science in Soil Mechanics at Imperial College of London (1990) and graduated with honours in Civil Engineering (1988). She has conducted experimental research, in the laboratory and the field, and endeavoured the development of theoretical frameworks of hydro-mechanical behaviour of soils and of geotechnical systems. Her work has conveyed knowledge about the influence of micro to meso structure on the behaviour of clays, under either full or partial saturation, in relation to their geological history, of reference for several elasto-plastic hardening constitutive models. With regard to geotechnical systems, she has mostly developed research about the geo-hydro-mechanical modelling of complex natural deposits, in either mountainous areas, or alluvial planes, the mechanics of slopes and landslides, the effects of geotechnical settlements on either ancient or modern structures, the response of contaminated marine sediment deposits. She has studied the processes generating different landslide mechanisms, implementing advanced soil mechanics in the assessment of landslide hazard at the site scale (work subsidized also by MIUR funding). In a recent 'Strategic Project', subsidized by European funds (selection on behalf of Apulia Region), under her coordination the research has resulted in a multi-scalar method for the assessment of landslide hazard based upon geo-hydro-mechanical analyses. She is currently doing research heading towards a framework of geo-hydro-mechanical characterization of landslide classes and on landslide risk sustainable mitigation (drainage systems and smart vegetation). She is author of 176 papers, published, after peer review, in international scientific journals, books and proceedings. On March 28th, Scopus quotes for her: 1552 total citations and HI 21. She has been and currently is PI of several national and international research grants. She has successfully tutored so far 12 Philosophy Doctors in Geotechnical Engineering and is currently tutoring 4 PhD students.

Giulia Viggiani is Professor of Infrastructure Geotechnics in the Department of Engineering of the University of Cambridge. She obtained a Laurea in Civil Engineering from Università di Napoli Federico II in 1989 and a PhD in Geotechnical Engineering from City University, London, UK, in 1994. At Cambridge, she leads the National Research Facility for Infrastructure Sensing and is a member of the Executive Board of the Cambridge Centre for Smart Infrastructure and Construction. She is the current Chair of ISSMGE TC204 'Underground Construction in Soft Ground'. She has been Academic Visitor at Imperial College of Science Technology and Medicine, London, Scientific Visitor at the Max Planck Institute for Mathematics in the Sciences, Leipzig, and Visiting Professor of Geomechanics at the University of Minnesota, Minneapolis. The main thrust of her research is on the applications of soil mechanics to geotechnical engineering, including underground construction, foundation engineering, and earthquake geotechnical engineering. She has carried out original research on tunnelling and construction processes, tunnelling induced damage assessment and connected mitigation and remedial measures, and performance based design of geotechnical structures under seismic actions, using a combination of field monitoring and laboratory observations, theoretical analyses, and physical and numerical modelling. Part of her research is devoted to topics in fundamental soil mechanics, such as the mechanical behaviour of freezing ground and of granular materials with crushable grains. She has experience on the development of novel laboratory equipment and experimental procedures to investigate fundamental aspects of the mechanical behaviour of soils and soft rocks.

GIULIA VIGGIANI
University of Cambridge, UK

ENRIQUE ROMERO
Universitat Politècnica de Catalunya - UPC, Spain

Enrique Romero is Full Professor of Geotechnical Engineering and Head of the Geotechnical Laboratory at the Universitat Politècnica de Catalunya (Spain) and Full Research Professor in the Geomechanics Group at the International Centre for Numerical Methods in Engineering (Spain).
His research mainly focuses on theoretical and experimental studies of multi-physics and multi-scale processes of geomaterials. His work has been mainly funded through 40+ research projects by different agencies for managing radioactive waste disposal (Belgium, Switzerland, France, Spain, and Japan) over the last 20 years. He is the author of 350+ scientific papers (50+ journal papers dealing with experimental soil mechanics with more than ten citations in Scopus), a member of editorial boards of several international journals, and co-editor of the books 'Advanced Experimental Unsaturated Soil Mechanics' (2005) and 'Laboratory and Field Testing of Unsaturated Soils' (2009).
Among recent awards, he has been '2nd European Distinguished Lecturer on Unsaturated Soils' (2020). He co-chaired the '4th European Conference on Unsaturated Soils' held in Lisbon in 2020 and was State-of-the-Art Lecturer on 'Unsaturated Soils' at ICSMGE 2022 in Sydney. He has been elected (January 2022) as chair of TC 106 ISSMGE of Unsaturated Soils.

Sebastiano Foti is a Professor in Geotechnical Engineering and Vice-Rector for Education at Politecnico di Torino, where he also received his PhD degree. He has been chair for the Civil Engineering program from 2015 to 2018. He is a member of the Technical Committees TC 203: Earthquakes and a past core member of TC 102: In situ tests of ISSMGE. He has been a member of the Project Team for drafting the new version of Eurocode 7 - Geotechnical design - Part 2: Ground investigation and testing.
His research activity is mainly devoted to geophysical methods for geotechnical characterization, with particular reference to surface wave testing, seismic waves in porous media and the use of geophysical techniques in the lab. His other research interests include seismic site response, soil-structure interaction, structural dynamic tests for the assessment of existing foundation systems. He has published over 200 papers in scientific journals and technical conferences, three books and six book chapters. He served in the editorial board of Soils and Foundations from 2015 to 2017. He was awarded the Geotechnical Research Medal (Bishop Medal) 2003 by the Institution of Civil Engineers (UK) for the best paper on geotechnical engineering, an Honorable Mention in the Best Paper category in the Geophysics journal in 2011 by the Society of Exploration Geophysics (USA) and the Outstanding Paper Award from Earthquake Spectra 2018 by the Earthquake Engineering Research Institute (USA).

SEBASTIANO FOTI
Politecnico di Torino, Italy

BRADY COX
Utah State University, USA

Dr. Cox is a Professor in the Civil and Environmental Engineering Department at Utah State University (USU). Prior to joining USU, he served on the faculty of The University of Texas for eight years and The University of Arkansas for six years. Dr. Cox specializes in geotechnical engineering, with emphasis on issues related to seismic design and in-situ site characterization for major construction projects. His research efforts combine experimental field testing with computational analyses and high-performance computing for subsurface imaging and multi-dimensional site response analyses. Dr. Cox is a recipient of the prestigious Faculty Early Career Development (CAREER) award from the U.S. National Science Foundation and the Presidential Early Career Award for Scientist and Engineers (PECASE), which he received in a ceremony at the White House from President Barack Obama. He has authored over 100 peer-reviewed publications and has taught eight different courses at the undergraduate and graduate levels at three different universities.

EARLY-CAREER KEYNOTE LECTURERS

ALICE DI DONNA
University of Grenoble Alpes, France

Alice Di Donna is Assistant Professor at the University Grenoble-Alpes (France) since 2017. Her main research activities are related to energy geotechnics and thermo-hydro-mechanical couplings in geomaterials, both from experimental and numerical point of view. She obtained her PhD at the EPFL (Lausanne, Switzerland) on the thermo-mechanical behavior of energy piles and was later on involved as a post-doc researcher at the Politecnico di Torino (Italy) in the development of the energy tunnels technology. She co-edited one book on energy geostructures (available in English, French and Chinese) and authored over 25 scientific papers. She holds a patent of an energy tunnel segment, called ENERTUN. She teaches basic and advanced soil mechanics and geotechnical structures. She also worked as structural and geotechnical engineer in civil engineering society based in Torino (Italy).

TINGFA LIU
University of Bristol, UK

Dr. Tingfa Liu is a Lecturer in Geotechnical Testing in the University of Bristol, based in the Earthquake and Geotechnical Engineering Research Group (EGERG). He received a MPhil degree from Tsinghua University and PhD from Imperial College London. Before joining the University of Bristol, Tingfa worked as a Post-Doctoral\ Research Associate at Imperial College London on the EPSRC and industry funded ALPACA and ALPACA Plus projects, investigating the behaviour of axially and laterally loaded piles driven in low- to medium-density chalk through extensive field and laboratory testing campaigns. His PhD was focused on advanced laboratory characterisation of the mechanical behaviour of Cowden till and Dunkirk sand, and the outcomes contributed partly to the Pile Soil Analysis (PISA) joint industry project. Tingfa has co-authored around 20 journal publications and is actively engaged with industry to develop and apply novel instrumentation and geotechnical testing techniques for research into critical offshore and onshore infrastructure.

THEME LECTURERS

ALEJANDRO MARTINEZ
(PS 8.1)
University of California Davis,
USA

ANAND PUPPALA
(PS 5.2)
Texas A&M University,
USA

ANDREA DIAMBRA
(PS 2.3)
University of Bristol,
UK

ANTONIO CARRARO
(PS 8.3)
Imperial College London,
UK

BEATRICE BAUDET
(PS 1.3)
University College London,
UK

CLAUDIA VITONE
(PS 6.3)
Politecnico di Bari,
Italy

DAVID REID
(PS 6.2)
University of Western Australia,
Australia

ERDIN IBRAIM
(PS 2.3)
University of Bristol,
UK

FRANCESCA CASINI
(PS 5.1)
University of Rome Tor Vergata,
Italy

JAVIER CAMACHO-TAUTA
(PS 6.1)
Nueva Granada Military
University, Bogotá, Colombia

JUBERT PINEDA
(PS 2.2)
University of Newcastle,
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KENNY KATAOKA SØRENSEN
(PS 3.3)
Aarhus University,
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LUCIA MELE
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RAFAELA CARDOSO
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REIKO KUWANO
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Hokkaido University,
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STUART HAIGH
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University of Cambridge,
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SW JACOBZ
(PS 7.2)
University of Pretoria,
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National University of Cordoba,
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In addition to mining, we take care of our production chain, investing in logistics and energy to ensure that our operations are efficient. In our business decisions, we prioritize the safety of people and the environment, acting with respect, care and integrity. We have learned from our history and will remain committed to fully repairing the communities and people impacted by the collapse of dam B1 pursuant to the signed agreement. We maintain constant dialogue with communities because we want to learn together to build a positive social, economic and environmental legacy for all.

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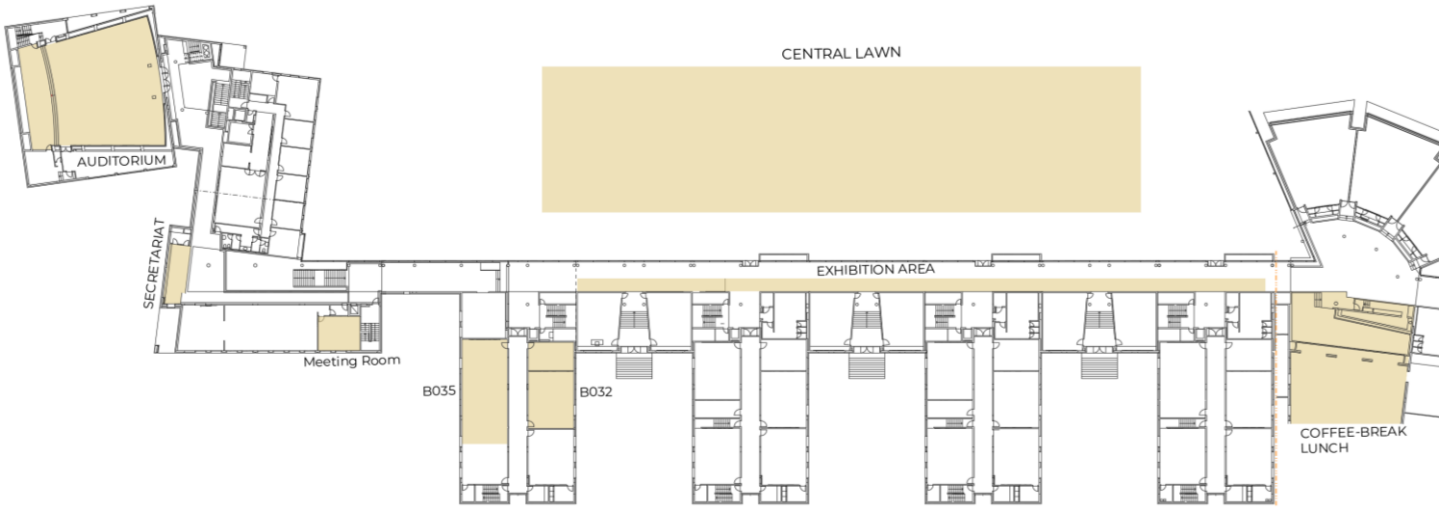

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