4th Asia-Pacific Conference on Physical Modelling in Geotechnics

ACPMG 2024

New York University Abu Dhabi (NYUAD) is thrilled to host the **4th Asia-Pacific Conference on Physical Modelling in Geotechnics (ACPMG 2024)** in the vibrant city of **Abu Dhabi, United Arab Emirates**, from **11th to 13th December 2024**.

The conference serves as a platform to showcase the latest advancements and innovations in multi-scale physical modelling, fostering collaboration and knowledge exchange among global experts. The program features cutting-edge research and developments across the following themes:

- New facilities, equipment, and measuring techniques
- Resilient Geotechnical Infrastructure
- Sustainability in Geotechnical Systems
- Energy Geo-structures and Foundation Systems
- Applications of Machine Learning and Artificial Intelligence in Geotechnical Engineering

Attendees will have the opportunity to engage in insightful discussions, participate in presentations, and visit the state-of-the-art **geo-engineering laboratories** at NYUAD.

We hope you have a rewarding experience at ACPMG 2024 and enjoy the unique blend of culture, innovation, and hospitality that Abu Dhabi has to offer.

Tarek Abdoun & Waleed El-Sekelly
Hosts of ACPMG 2024

SHORES
Resilience/Sustainability/Energy

جامعة نيويورك أبوظبي
NYU ABU DHABI

ACPMG 2024

The ACPMG 2024 is organised by the Technical Committee on Physical Modelling (TC104) of the International Society of Soil Mechanics and Geotechnical Engineering (ISSMGE).

The organising committee of ACPMG 2024 comprises the following members:

Hosts:

Prof. Tarek Abdoun, New York University Abu Dhabi
Dr. Waleed El-Sekelly, New York University Abu Dhabi

Committee Members:

Dr. Kemal Celik, New York University Abu Dhabi
Dr. Mostafa Mobasher, New York University Abu Dhabi
Dr. Borja Garcia de Soto, New York University Abu Dhabi
Dr. Mohamed Moustafa, New York University Abu Dhabi
Dr. Rita Sousa, New York University Abu Dhabi
Dr. Mohamed Ghazy, New York University Abu Dhabi

International Scientific Committee:

Prof. Ioannis Anastasopoulos, ETH Zürich
Prof. Magued Iskander, New York University
Dr. Marawan Alzaylaie, Dubai Development Authority
Dr. Mohamed Arab, University of Sharjah

ISSMGE and TC104

The International Society of Soil Mechanics and Geotechnical Engineering (ISSMGE) is the leading professional body representing the interests and activities of Engineers, Academics and Contractors worldwide, who actively participate in geotechnical engineering. With 90 Member Societies and 21,000 individual members from around the globe, ISSMGE serves as the hub for geotechnical engineering professionals.

The Technical Committee 104 (TC104) plays a vital role in advancing knowledge and practice in the field of physical modelling in geotechnical engineering. Through establishing working groups, TC104 facilitates the sharing of resources for teaching, research, and the dissemination of physical modelling in geotechnical engineering. The ACPMG is the Asian regional conference, alternating with the International Conference in Physical Modelling in Geotechnics (ICPMG). Initially known as Asiafuge, the ACPMG covers the whole spectrum of advancements in physical modelling in geotechnical engineering. The focus is not only on centrifuge modelling but extends to laboratory scale modelling and field testing. This year ACPMG will cover the Asia-Pacific region.

Programme at a glance

The **4th Asia-Pacific Conference on Physical Modelling in Geotechnics (ACPMG 2024)** offers a dynamic and comprehensive program, highlighting advancements in multi-scale physical modelling through four key themed sessions.

Over the three days, the conference will feature **keynote presentations** and **parallel sessions** on the second and third days, fostering in-depth discussions and knowledge exchange. A **poster session** on the afternoon of the second day will provide an excellent platform for engaging discussions and exploring insights from submitted papers.

The program also includes a **lab tour** on the first day, offering attendees an exclusive opportunity to explore NYUAD's **state-of-the-art geotechnical centrifuge facility**, showcasing cutting-edge research and experimental capabilities.

We look forward to your active participation in this exciting and enriching program!

	Time (GST) (GMT+6 hours)	Programme	
Day 1 (Dec. 11,2024)	08:30 - 09:00	Registeration/Check in	
	09:00 - 09:15	Welcome Remark	
	09:15 - 09:30	Opening Address	ISSMGE
	09:30 - 11:00	Key Note Session#1	Yong Yuan Ioannis Anastasopoulos
	11:00 - 11:30	Break	
	11:30 - 13:00	Key Note Session#2	Conleth O'Loughlin Yu Zhao
	13:00 - 14:30	Lunch	
	13:45 - 14:30	TC104 meeting	
	14:30 - 16:00	Key Note Session#3	Giulia Viggiani Chian Siau Chen Darren
	16:00 - 16:30	Break	
	16:30 - 17:15	Key Note Session#4	Xianfeng MA
	17:15 - 18:00	Centrifuge Tour	
Day 2 (Dec. 12,2024)	09:00 - 10:30	Key Note Session#5	BVS Viswanadham Tae-Hyuk Kwon
	10:30 - 11:00	Break	
	11:00 - 12:30	**Themed Session#1:** New facilities, new equipment, and measuring techniques	Themed Lecturer: Miguel Cabrera
	11:00 - 12:30	**Themed Session#2:** Advances in Numerical Modeling and AI Innovations in Geotechnical Engineering	Themed Lecturer: Waleed El-Sekelly
	12:30 - 13:30	Lunch	
	13:30 - 14:30	Poster Session	
	14:30 - 16:00	Key Note Session#6	Tarek Abdoun Mourad Zeghal
	16:00 - 16:30	Break	
	16:30 - 17:15	Key Note Session#7	Tetsuo Tobita
	18:00	Gala Dinner	
Day 3 (Dec. 13,2024)	09:00 - 09:45	Key Note Session#8	Anthony Leung
	09:45 - 10:15	Break	
	10:15 - 11:45	**Themed Session#3:** Innovative Techniques and Advances in Soil Improvement and Ground Stabilization	Themed Lecturer: Mohamed Arab
	10:15 - 11:45	**Themed Session#4:** Resilient Geotechnical Infrastructure	Themed Lecturer: Magued Iskander
	11:45 - 11:55	TC104 activities and the upcoming ICPMG	Ioannis Anastasopoulos
	11:55 - 12:10	Closure of the ACPMG 2024	

Distinguished Speakers (Day 1)

Seismic Performance of Underground Structures: 1-g Shaking-table Tests

Yuan Yong (*Tongji University, China)*

Dr Yuan Yong, full professor of Tongji University since 1996. Professor Yuan is currently the member of European Academy of Sciences and Arts (EASA), president of Shanghai Science & Technology Development Foundation (SSTDF), director of Sino-Austria Research Center on Tunnel and Underground Engineering (ACTUE), and Sino-Belgium Joint Laboratory of Industrialized Construction (LIC). He also serves as members of Committee on Education and Training of International Tunnelling Association (ITA-CET), Performance Committee of federal Internationale de Beton (fib), editorial board members of Engineering Structures, Structural Concrete, Scientific Reports, and Guest Editor of Frontiers of Structural and Civil Engineering.

Tsunami–induced failure of breakwaters and scour-induced failure of bridge foundations

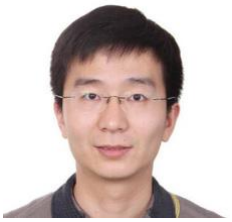
Ioannis Anastasopoulos (*ETH Zürich, Switzerland*)

Ioannis Anastasopoulos has been Full Professor of Geotechnical Engineering at ETH Zurich since 2016. Since 2023, he is the Head of Department of Civil, Environmental and Geomatic Engineering. He specializes in geotechnical earthquake engineering and soil–structure interaction, combining numerical with experimental methods. He is the inaugural recipient of the ISSMGE Young Researcher Award in Geotechnical Earthquake Engineering, and winner of the 2012 Shamsher Prakash Research Award. He has been a consultant in major projects in Europe, US and the Middle East. His consulting work ranges from the design of pile-rafts of tall buildings, to bridge foundations, metro stations, tunnels, and quay walls, as well as special design against faulting. He is Editor-in-Chief of Soil Dynamics and Earthquake Engineering, and has been Associate Editor or Editorial Board Member in several Journals, including the JEE and Géotechnique. He is a Director of IAEE, and Chair of ISSMGE TC104 on Physical Modelling.

Physical modelling beyond the laboratory and at different scales

Conleth O'Loughlin (*University of Western Australia, Australia*)

Conleth O'Loughlin is a Professor of Geotechnical Engineering in the Centre for Offshore Foundation Systems at The University of Western Australia. He received his Civil Engineering Degree from The Queen's University of Belfast in 1997 and his PhD from Trinity College Dublin in 2002. His research interests include anchoring systems, penetrometer testing and foundation response of offshore wind turbines, as communicated in over 200 publications. He was Editor in Chief of the International Journal of Physical Modelling in Geotechnics between 2018 and 2021 and is the Director of the National Geotechnical Centrifuge Facility, located at the University of Western Australia.



New Facilities, New Equipment, and Measuring Techniques

Yu Zhao (*Zhejiang University, China*)

Dr. Yu Zhao, a Professor of geotechnical engineering at Zhejiang University, the director of ZJU400 centrifuge laboratory at the same institution, holds a PhD from the University of Tokyo (2010). His research spans slope stability and landslide kinetics, soil displacement measurement with emphasis on LiDAR and photogrammetry method, and hypergravity experiment by centrifuge modelling. He has published more than 70 peer reviewed journal papers or book chapters and supervised many MSc and PhD students. Leading research programs such as the Major National Science and Technology Infrastructure Project (CHIEF) and National Natural Science Foundation Projects (NSFC), Dr. Zhao addresses challenges in centrifuge modelling of slope instability and transition to flow-type failure, debris avalanche, seismic performance of earth dam stability and other important topics on landslides.

Centrifuge Modelling of River Embankment Instabilities Induced by Transient Seepage

Giulia Viggiani (University of Cambridge, England)

Giulia Viggiani joined the Department of Engineering at the University of Cambridge as Professor of Infrastructure Geotechnics in 2017. Before this, she was Full Professor of Geotechnics at Università di Roma Tor Vergata. She has a Laurea in Civil Engineering from Università di Napoli Federico II and a PhD in Geotechnical Engineering from the City University of London. She has been Scientific Visitor at the Max Planck Institute for Mathematics in the Sciences, in Leipzig, MTS Visiting Professor of Geomechanics at the University of Minnesota, and Academic Visitor at Imperial College. She currently chairs ISSMGE TC204 – Underground Construction in Soft Ground. 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.

Seismic Induced Uplift of Buoyant Structures in Liquefiable Soils

Chian Siau Chen, Darren (*National University of Singapore, Singapore*)

Dr. Chian Siau Chen, Darren is the Vice Dean of the College of Design and Engineering at the National University of Singapore. Dr. Chian is also the Director of the Centre for Soft Ground Engineering and an Associate Professor at the Department of Civil and Environmental Engineering at the university. He obtained his Ph.D. and B.Eng. from Cambridge University and Nanyang Technological University respectively. His core research interests are earthquake engineering and ground improvement. Dr. Chian was named as Asia's Top 10 Innovators under 35 (TR35) by the MIT Technology Review in 2016, GeoSS Promising Young Geotechnical Engineer Award in 2018, Enterprise Singapore SAC Distinguished Award in 2018, Ministry of Transport Distinguished Minister Innovation (Distinguished) Award in 2021, Award Finalist of the Land Transport Excellence Award (Most Innovative Solution) and Prominent Geotechnical Engineer Award in 2022. Dr. Chian is the current President of the Geotechnical Society of Singapore (GeoSS).

Centrifuge model testing on three-dimensional excavation effects in soft ground

Xianfeng Ma (*Tongji University, China*)

Dr. Xianfeng Ma is currently a professor at the department of geotechnical engineering, Tongji Unviersity, China, where he got his degrees from bachelorship to doctorship. From 1997 to 2003, he stayed in Japan, first as a visiting PhD student, then an assistant professor at Tokushima University followed by a researcher at Geo-Research Institute in Osaka. He returned to Tongji University in 2003, responsible for the establishment of geotechnical centrifuge modelling lab, of which he is now the director. He also stayed one year in 2008 at Schofield Centre, Cambridge University as a visiting scholar hosted by Professor Malcolm Bolton. His research topics covers a variety of fields including centrifuge modelling on retained excavation, tunnelling impact on surrounding ground and adjacent structures, soil improvement and shaking table tests on underground structures etc. He is a member of TC104 of ISSMGE and currently the editor in chief for IJPMG.

Distinguished Speakers (Day 2)

Evaluation of the Behavior of Geogrid-Reinforced Soil Walls Subjected to Rainfall Through Centrifuge Model Tests

BVS Viswanadham (*Indian Institute of Technology, India*)

Prof. BVS Viswanadham has been working as a faculty at Department of Civil Engineering IIT Bombay, India for the last 25+ years. Prior to joining the institute, he worked as a Senior Project Officer at Department of Ocean Engineering, IIT Madras and Scientist, CSIR- Central Road Research Institute (CRRI), New Delhi, India during 1989-1991 and 1991-1998. In 1996, he returned to India from Germany after completing his Dr.-Ing. programme during 1994-1996. Currently, Prof. Viswanadham is Institute Chair Professor during May 2017-April 2020 and since March 2021. His research interests are Centrifuge-based physical modelling, Ground Improvement; Geosynthetics and Design of Geosynthetic Reinforced Soil Structures; Environmental Geotechnics; Waste containment systems; Landfills; Deep Excavations; Slope stabilization and Slope protection; Natural hazard mitigation.

Physical Modeling on Pullout Behaviors of Root-inspired Anchors: Emphasis on interplays among architectural complexity, embedment depth and material stiffness

Tae-Hyuk Kwon (*Korea Advanced Institute of Science of Technology (KAIST), Korea*)

Tae-Hyuk Kwon currently works as an associate professor in Department of Civil and Environmental Engineering at Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea. He received his PhD at KAIST. During his PhD, he spent one year working as a visiting scholar at Georgia Tech. He worked at Lawrence Berkeley National Laboratory (LBNL) as a postdoctoral fellow, and at Washington State University as a tenure-track assistant professor. His research mainly focuses on three themes: energy geotechnology, bio-geotechnics, and natural geohazards. The theme “bio-geotechnics” aims to understand geo-bio-chemo-thermo-hydro-mechanically coupled processes in subsurface and develop nature-inspired sustainable geotechnical design and ground improvement techniques.

Advancements in Liquefaction Risk Assessment Under High Overburden Pressure

Waleed El-Sekelly (*New York Univereisty Abu Dhabi, UAE*)

Dr. Waleed E. El-Sekelly is a visiting associate professor and the technical manager of the geotechnical centrifuge facility at New York University Abu Dhabi, NYUAD. His research interests cover topics such as geotechnical centrifuge and full-scale testing, numerical modeling, Artificial Intelligence applications in geotechnical engineering, and liquefaction evaluation and settlement analysis. He has published over 50 technical journal and conference articles. He also received several international awards including the American Society of Civil Engineers (ASCE) Middlebrooks Award for best journal publication.

Centrifuge Modeling of Pile Installation: from rapid to prolonged impact methods

Miguel Cabrera (*Delft University of Technology (TU Delft), Netherlands*)

Miguel’s research is in the area of geotechnical engineering with a focus on complex, multiphase, geophysical and environmental flows, and soil-fluid-structure interaction systems. His interests lie in linking the fundamental understanding of such physical processes with the current and future challenges of the natural, living and built environment. Miguel holds a Bachelor on Civil Engineering from Universidad Nacional de Colombia and a Master in Geotechnical Engineering from Universidad de los Andes, Colombia. Miguel received his PhD from the University of Natural Resources and Applied Life Sciences, Austria, working on the simulation of granular flows in rotating systems an sponsored by a Marie Skłodowska-Curie fellowship through the MUMOLADE project. From 2016 to 2022 Miguel was appointed as Assistant and then Associate Professor at Universidad de los Andes, Colombia. Since August 2022, Miguel joined the section of Geo-Engineering at TU Delft, working in the physical modelling of land instabilities and soil-structure interaction systems.

Analysis of LEAP Experimental Data and Validation of a Numerical Model: Physical Model Results

Tarek Abdoun (*New York University Abu Dhabi, UAE*)

Professor Abdoun is Global Distinguished Professor at New York University. Prof. Abdoun research interests cover geotechnical engineering, Advanced Field Monitoring, Centrifuge & Full-scale Testing, Soil Dynamics and Earthquake Engineering, and Remote sensing. Prof. Abdoun received several awards from professional societies, including the American Society of Civil Engineers (ASCE) Thomas A. Middlebrooks Award for best journal publication, Walter L. Huber Civil Engineering Excellence in Research Prize and the US Army "Commander's Award and Medal for Public Service." He is also the recipient of several educational society awards, including the American Society of Engineering Education (ASEE) north region "Outstanding Teaching Award. He authored over 250 technical publications.

Analysis of LEAP Experimental Data and Validation of a Numerical Model: A Machine Learning Approach

Mourad Zeghal (*Rensselaer Polytechnic Institute, USA*)

Mourad Zeghal is Professor of Civil Engineering at Rensselaer Polytechnic Institute (RPI) in the United State. He holds master's and PhD degrees from Princeton University and has been at Rensselaer for over 25 years. The areas of expertise of Dr. Zeghal are related to geohazards such as earthquakes and floods, and focus on the use of information technology tools in modeling, simulation and analysis of experimental data. He has authored more than 200 technical publications in these topics. His research was supported by a combination of national and private funding agencies including the National Science Foundation (NSF) and National Institute of Standards and Technology (NIST). He was a recipient of a CAREER award from NSF, lead investigator of a large Technology Innovation Project (TIP) supported by NIST, and co-principal investigator of a Network of Earthquake Engineering Simulations (NEES) project supported by NSF. Over the last 10 years, he has been one of three US researchers leading the international collaborative research called LEAP or Liquefaction Experiments and Analysis Projects, supported by NSF.

Drained or Partially Drained – that is the question.

Tetsuo Tobita (Kansai University, Japan)

Dr. Tetsuo Tobita is a Professor of Civil Engineering at Kansai University, Osaka, Japan. He received his bachelor's (1995) and master's (1997) degree in Civil Engineering from Kyoto University, Japan. In 2002, he obtained his Ph. D from University of Southern California, USA with the dissertation title "Energy-based modeling of liquefaction and earthquake site response." From 2002 to 2016, he had been an assistant and associate professor at the Disaster Prevention Research Institute, Kyoto University. In April 2016, he moved to Kansai University. He has over 20 years of experience in the field of Earthquake Geotechnical Engineering. He has active research interests in soil liquefaction, earthquake-induced landslides, and dynamic soil-structure interaction problems. His expertise extends from dynamic centrifuge modelling to numerical analysis. Currently, he is a member of ISSMGE TC104 on Physical Modelling. Recently, he, as one of editors, published an open-access book of the proceedings of "LEAP-ASIA-2019" workshop.

Distinguished Speakers (Day 3)

Modelling soil-root hydromechanical interaction for nature-based solutions

Anthony Leung (*Hong Kong University of Science and Technology (HKUST)*)

Dr Leung is an Associate Professor in the Civil and Environmental Engineering and the Director of the Geotechnical Centrifuge Facility at the HKUST. His research expertise is unsaturated soil-vegetation interaction with emphasis on geotechnical engineering applications such as slope stabilisation. Dr Leung has published more than 120 journal articles in the subject of soil-vegetation interaction and co-authors a textbook 'Plant Soil Slope Interaction' published by Taylor & Francis. Dr Leung is the awardee of the 2022 Geotechnical Research Medal (best paper in Geotechnique), 2022 Outstanding Young Geotechnical Engineer Award of the ISSMGE, 2021 R. M. Quigley Award (best paper in Canadian Geotechnical Journal), 2019 Excellent Youth Scholar of the NSFC and 2019 Bright Spark Lecture Award of the ISSMGE. He is currently the President of the Hong Kong Geotechnical Society (HKGES) and the General Secretary of the TC106 and TC107 (Tropical& Residual Soils).

Thirty Years of Transparent Soils: Evolution, Innovations, and Future Directions in Physical Modeling

Magued Iskander (*New York University, USA*)

Magued G. Iskander, Ph.D., P.E., F.ASCE, is a leading expert in geotechnical engineering with over 30 years of experience in the analysis, design, and construction of foundations. He is a professor at NYU's Tandon School of Engineering and has chaired the Civil and Urban Engineering Department since 2013. Dr. Iskander is widely recognized for pioneering the use of transparent soils to study geotechnical phenomena. His research covers machine learning in geotechnics, tunneling, seismic earth pressure, and recycled polymer piling, among other topics. A licensed Professional Engineer in New York, New Jersey, and Wisconsin, he has served as an expert in New York courts. Dr. Iskander holds a B.Sc. in Civil Engineering from Alexandria University and a Ph.D. from UT Austin. He has authored over 250 publications, secured $26M+ in funding, and received several awards, including the NSF CAREER Award and the Chi Epsilon Teaching Award. He has graduated 16 doctoral and 40+ master's students.

Harnessing Biogeotechnical Methods for Sustainable Ground Improvement

Mohamed Arab (*University of Sharjah, UAE*)

Dr. Mohamed G. Arab is a Professor of Geotechnical Engineering at the University of Sharjah, UAE. He holds a Ph.D. in Civil and Environmental Engineering from Arizona State University. With over 20 years of experience, Dr. Arab's research focuses on soil improvement, geotechnical earthquake engineering, and bio-geotechnical methods. He has authored 88 papers in international journals and conferences and has secured over 10 million dirhams in research funding as PI and Co-PI. His work emphasizes sustainable engineering solutions. Dr. Arab is active in the geotechnical community as an editor, reviewer, and member of international societies, and has received multiple awards, including the 2022/2023 Annual Incentive Award for Community and University Service from the University of Sharjah.

Detailed Programme

Wednesday, December 11, 2024

08:30 – 09:30 **Registration and Welcome to the ACPMG 2024 | NYUAD - A6 - Auditorium**
Opening cermony
Samer Madanat (NYUAD), Tarek Abdoun (NYUAD) and Marawan Alzaylaie (ISSMGE)

09:30 – 10:15 **Keynote Lecture 1: Seismic Performance of Underground Structures : 1-g Shaking-table Tests| NYUAD - A6 - Auditorium**
Yong Yuan (*Tongji University)*
Chairperson: Marawan Alzaylaie

10:15 – 11:00 **Keynote Lecture 2: Tsunami–Induced Failure of Breakwaters and Scour-Induced Failure of Bridge Foundations| NYUAD - A6 - Auditorium**
Ioannis Anastasopoulos (*ETH Zürich)*
Chairperson: Rita Sousa

11:00 – 11:30 Coffee and Refreshments

11:30 – 12:15 **Keynote Lecture 3: Physical Modelling Beyond The Laboratory and at Different Scales | NYUAD - A6 - Auditorium**
Conleth O'Loughlin (*University of Western Australia)*
Chairperson: Tadahiro Kishida

12:15 – 13:00 **Keynote Lecture 4: New Facilities, New Equipment, and Measuring Techniques | NYUAD - A6 - Auditorium**
Yu Zhao (*Zhejiang University)*
Chairperson: Chian Siau Chen Darren

13:00 – 14:30 Lunch

13:45 – 14:30 **TC104 Meeting | NYUAD – C2 – E047**

14:30 – 15:15 **Keynote Lecture 5: Centrifuge Modelling of River Embankment Instabilities Induced by Transient Seepage| NYUAD - A6 - Auditorium**
Giulia Viggiani (*University of Cambridge)*
Chairperson: Yong Yuan

15:15 – 16:00 **Keynote Lecture 6: Seismic Induced Uplift of Buoyant Structures in Liquefiable Soils| NYUAD - A6 - Auditorium**
Chian Siau Chen, Darren (*National University of Singapore)*
Chairperson: Giulia Viggiani

16:00 – 16:30 Drinks and Refreshments

16:30 – 17:15 **Keynote Lecture 7: Centrifuge Model Testing on Three-Dimensional Excavation Effects in Soft Ground | NYUAD - A6 - Auditorium**
Xianfeng Ma (*Tongji University)*
Chairperson: George Mylonakis

17:15 – 18:00 **Lab visit to NYUAD**

Thursday, December 12, 2024

09:00 – 09:45 **Keynote Lecture 8: Evaluation of the Behavior of Geogrid-Reinforced Soil Walls Subjected to Rainfall Through Centrifuge Model Tests | NYUAD - A6 - Auditorium**
B.VS Viswanadham (*Indian Institute of Technology)*
Chairperson: Tetsuo Tobita

09:45 – 10:30 **Keynote Lecture 9: Physical Modeling on Pullout Behaviors of Root-inspired Anchors: Emphasis on interplays among architectural complexity, embedment depth and material stiffness| NYUAD - A6 - Auditorium**
Tae-Hyuk Kwon (*KAIST)*
Chairperson: Magued Iskander

10:30 – 11:00 Coffee and Refreshments

11:00 – 12:30 **Themed Session 1: New facilities, new equipment, and measuring techniques | NYUAD - A6 - Auditorium**
Chairperson: Conleth O'Loughlin | Miguel Cabrera

Themed Lecture: Centrifuge Modeling of Pile Installation: from rapid to prolonged impact methods
Miguel Cabrera

14 Recent innovations in the geotechnical centrifuge modelling at IWHR
Z.-T. Zhang, X.-D. Zhang, J. Hu, Y.-K. Wang and W.-K. Yang

52 Acoustic Emission technique using time-driven method as a tool for assessing the micro-behavior of dense sand
S.A. Solh and S. Abdelaziz

12 A Novel EPB Model Test Equipment For Tunnel Face Stability Analysis: Incorpoarating Dynamic Excavation Process
Xuejian Chen, Hongqing Liu and Rita Sousa

93 Modelling tailings dam in a geotechnical centrifuge using a hybrid loading simulator
Pankaj Kumar and B.V.S. Viswanadham

29 Pullout capacity and displacement behavior of opening plate anchor using plane strain box
Mehrzad Shojaee, Mohsen Sabermahani, Emad Mirzaee and Seyed Vahid Mojtahed Sistani

26 Challenges and experiences of executing DSM columns in stiff clayey soils: A field validation results
S.M. Alavi, R. Saleh Abadi, S. Shakeri Talarposhti, M. Aghamolaei and A.A. Khodaei Ardebili

38 Centrifuge Modelling of Extreme Rainfall Events on Reinforced Lateritic Soil Slopes
Ruchita Salvi, Ashish Juneja and Satyanarayana Murty Dasaka

11:00 – 12:30 **Themed Session 2: Advances in Numerical Modeling and AI Innovations in Geotechnical Engineering | NYUAD - A6 - Theater**

Chairperson: Tae-Hyuk Kwon | Waleed El-Sekelly

Themed Lecture: Advancements in Liquefaction Risk Assessment Under High Overburden Pressure
Waleed El-Sekelly

92 ANN model for estimating ultimate bearing capacity of piles socketed in Dubai limestone
Hoda Hany Mostafa

34 Efficacy of instance-based learning algorithms for the prediction of ultimate bearing capacity of piles
A.A. Ganiyu and F.R. Alalawi

39 Two-phase CFD investigation of the flow-barrier interaction for slit barriers
A, Aghagoli and H. Sadeghi

20 Numerical Modeling as a Tool to Assess Empirical Methods for Interpreting O-cell Pile Load Test Results
M. Abualkhair, A. Hefny and S. Elkholy

36 Centrifuge Model Test and Numerical Analysis on the Behavior of Embankment on Cohesive Ground from Construction to Post Earthquake
S. Sato, S. S. Suzuki and M. Sakemoto

31 Validation of a countermeasure against pipe uplift during liquefaction
H.K. Hong, T. Tobita, K. Miyamoto and Y. Konishi

27 Using Artificial Neural Networks to Predict Seismic Shear-Induced Pore Water Pressure
Abdoullah Namdar and Omer Mughieda

12:30 – 13:30 Lunch

13:30 – 14:30 **Poster Session | NYUAD - A6 – Atrium**

17 Exploring the Potential of Energy Geostructures for Road and Bridge Pavement Heating and Cooling
D. Salciarini, A. Lupattelli and G. Capati

39 Two-phase CFD investigation of the flow-barrier interaction for slit barriers
A. Aghagoli and H. Sadeghi

40 Development of a rainfall simulator for the investigation of slope stability
P. AliPanahi, F. Yazdani and H. Sadeghi

49 Estimating Thermal Conductivities of Layered Soils Using Conventional Thermal Response Tests
M.S. Al-Tawaha and S.L. Abdelaziz

50 Comparison of the impact of biopolymer on grassroots growth and strength of surficial soils
A. Lamsal, M. Sasar, and S. L. Abdelaziz

51 Effect of Varying Freezing Temperatures on the Dynamic Elastic Modulus of Clays
Sepehr Akhtarshenas, Seyed Morteza Zeinali, and Sherif L. Abdelaziz

56 Experimental and FELA evaluation of Uplift Capacity of Strip Anchors in Sand and Failure Mechanism evaluation using Image Processing
Hitesh Rupani and Jitesh T. Chavda

60 Effect of centrifugal spinning process and re-shaking on soil density changes in liquefiable small scale physical models
S. Ghalandarzadeh, M. Shirazi, M. Sabermahani, A. Ghalandarzadeh, M. Hasanvandian and Sh. Zare bidaki

65 Direct measurement of shear stress and shear strain in soil: Application to physical models
Mark Talesnick

70 Enhancing Centrifuge-Based Physical Modeling of Reinforced Concrete with 3D Printed Reinforcement Cages
M. Elmorsy, C. Leinenbach and M.F. Vassiliou

81 Innovative Approaches to Soil Improvement: Separating Macro, Micro, Nano, and Pico Additives for the Future of Physical Modelling in Geotechnical Engineering
Hamed Niroumand and Lech Balachowski

83 Mutual Effect between Constructing Close-in New Buildings and Tunnels
Ahmed A. Elhadidi, Mostafa M. ElSayed and Adel. Y. Akl

85 Effect of Salt Content on Sabkha Soil Using Deep Soil Mixing Technique: Physical and Numerical Modelling
Mohammed A. Hammad, Yahia E.-A. Mohamedzein, and Mohamed Al-Aghbari

91 Innovative Approaches to Protecting Heritage and Historical Buildings: Utilizing Spray Techniques for Macro, Micro, Nano, and Pico Additives in Geotechnical Engineering
Hamed Niroumand and Lech Balachowski

95 Development of Model Preparation Procedure for MICP-treated Sand in Centrifuge Tests
Soo-Min Ham, Alexandra Camille M. San Pablo, Daniel W. Wilson and Jason T. DeJong

14:30 – 15:15 **Keynote Lecture 10: Analysis of LEAP Experimental Data and Validation of a Numerical Model: Physical Model Results | NYUAD - A6 - Auditorium**
Tarek Abdoun (*New York University Abu Dhabi)*
Chairperson: Ioannis Anastasopoulos

15:15 – 16:00 **Keynote Lecture 11: Analysis of LEAP Experimental Data and Validation of a Numerical Model: A Machine Learning Approach | NYUAD - A6 - Auditorium**
Mourad Zeghal (*Rensselaer Polytechnic Institute)*
Chairperson: BVS Viswanadham

16:00 – 16:30 Drinks and Refreshments

16:00 – 17:15 **Keynote Lecture 12: Drained or Partially Drained – that is the question | NYUAD - A6 - Auditorium**
Tetsuo Tobita (*Kansai University)*
Chairperson: Mohamed Arab

18:00 Gala Dinner

Friday, December 13, 2024

09:00 – 09:45 **Keynote Lecture 13: Modelling Soil-Root Hydromechanical Interaction for Nature-Based Solutions | NYUAD - A6 - Auditorium**
Anthony Leung (*HKUST)*
Chairperson: Tarek Abdoun

09:45 – 10:15 Coffee and Refreshments

10:15 – 11:45 **Themed Session 3: Innovative Techniques and Advances in Soil Improvement and Ground Stabilization | NYUAD - A6 - Auditorium**
Chairperson: Xianfeng MA | Mohamed Arab

Themed Lecture: Harnessing Biogeotechnical Methods for Sustainable Ground Improvement
Mohamed Arab

59 Experimental assessment of shear behavior of crumb rubber intermixed steel slag used as railway subballast
N. Sagar, A. Hussain and S. K. K. Hussaini

48 Influence of temperature on the preconsolidation pressure of normally consolidated clays over the full temperature domain
Suzanna Gevorgyan, Seyed Morteza Zeinali and Sherif Abdelaziz

25 Estimating the impact of pharmaceutical (diclofenac) in pore water on the vane shear strength of compacted soil
Thanusan Ranjan, Yi En Chng, Sean Shao Zuen Lau and Mavinakere Eshwaraiah Raghunandan

37 Investigating the effects of an NPK fertilizer on the strength characteristics of soil
J. Kaur, A. K. Jha, and L. Oka

90 Exploring the Impact of Physical Modelling on Land Subsidence in Geotechnical Engineering
Hamed Niroumand and Lech Balachowski

67 The Effect of Embedment on the Seismic Response of a Pile Group in Clay: Insights from 1-g Shaking Table Tests
Ramon Varghesm, A. Boominathan, Subhadeep Banerjee and Vikram Pakrashi

10:15 – 11:45 **Themed Session 4: Resilient Geotechnical Infrastructure | NYUAD - A6 - Theater**
Chairperson: Rita Sousa | Magued Iskander

Themed Lecture: Thirty Years of Transparent Soils: Evolution, Innovations, and Future Directions in Physical Modeling
Magued Iskander

69 Preliminary Centrifuge Tests on Unreinforced Masonry Buildings Built Using a Sand-Based 3D Printer
M. Elmorsy, A. Katsamakas, L. Jones, E. Brunschweiler, I. Anastasopoulos and M.F. Vassiliou

58 Shear behaviour of polyurethane-stabilized recycled ballast
K.V.S. Prasad and S.K.K. Hussaini

88 Static Behaviour Of Micropiles Foundation (With Different Inclination Angles) On Slopes
M. Mlhem and A. Adra

63 Ocean Acidification and Climate Change Geohazards on Artificial Islands: A Focus on Liquefaction Susceptibility
Walid Mekni, Kosmas Pavlopoulos and Hossam Eldin Abdella Ali

66 The role of geotechnical centrifuge modelling in economical and sustainable development of artificial islands and land reclamation using calcareous sands in the Middle East
M.M. Zaheer

22 Behavior of 2×2 Pile Groups with Varied Number of Energy Piles in Dry Silty Soil
Fardin Jafarzadeh, Sina Afzalsoltani

11:45 – 11:55 **TC104 activities and upcoming conferences | NYUAD - A6 - Auditorium**
TC104 Physical modelling in Geotechnics
Ioannis Anastasopoulos (ETHZ)

11:45 – 12:10 **Closure of the ACPMG 2024**
Closure cermony
Tarek Abdoun (NYUAD) and Waleed El-Sekelly (NYUAD) | Hosts of the ACPMG 2024

Explore Abu Dhabi

List of a few recommended options for self-directed exploration:

Sheikh Zayed Grand Mosque: The largest mosque in the UAE.

Observation Deck at 300: The highest vantage point in Abu Dhabi. Level 74 of Conrad Abu Dhabi Etihad Towers.

Yas Theme Parks: Home for three of the world's leading theme parks – Ferrari World Abu Dhabi, Yas Waterworld, and Warner Bros World Abu Dhabi.

Louvre Museum: A world-renowned art museum.

Eastern Mangrove National Park: Mangrove forest with over 60 species of birds, plus channels for kayaking and other water activities.

Heritage Village: A family-friendly spot to experience the traditional way of life in the desert.

UAE Currency Museum: The museum showcasing a variety of paper notes, gold and silver coins.

The Founder's Memorial: A permanent national tribute dedicated to commemorating the life, legacy and values of the late Sheikh Zayed bin Sultan Al Nahyan, the founding father of the UAE.

Emirates National Auto Museum: The unique collection of vehicles.

Desert camping, Jeep safari, and Dune bashing: The best desert experience in the UAE.

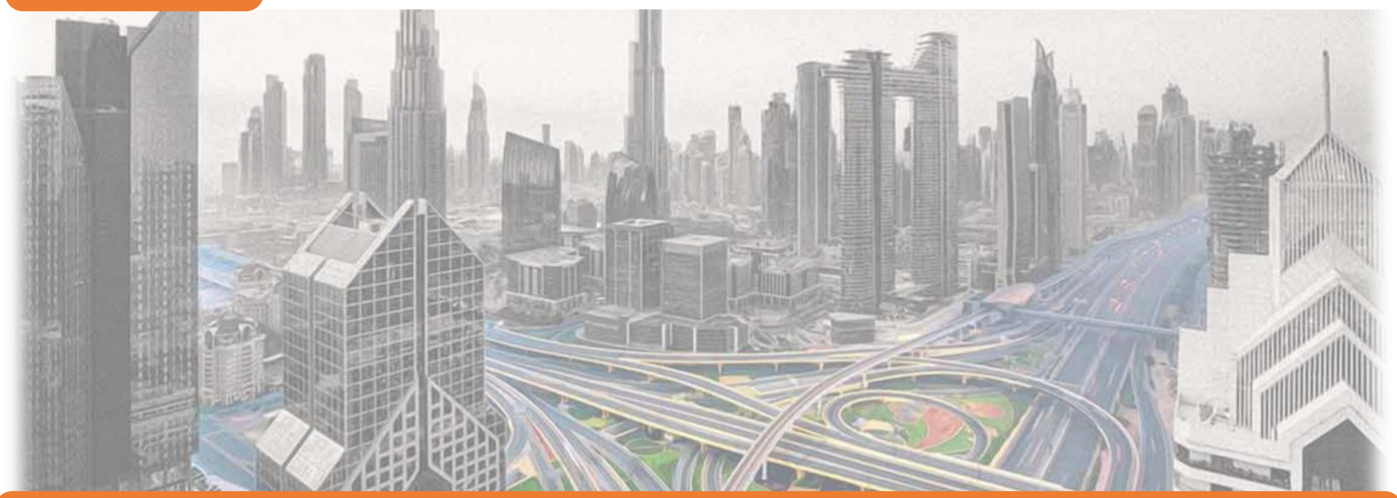
Emirates Palace: The epitome of luxury in Abu Dhabi, showcasing Arabian hospitality at its finest.

Qasr Al Hosn: The oldest and most significant building in Abu Dhabi, holding the city's first permanent structure; the watchtower.

Qasr Al Watan: More than just a palace, it is an enriching interactive journey in a contemporary setting that reveals and reflects on governance, knowledge and craftsmanship.

The Souk at World Trade Center Abu Dhabi: Offering everything from traditional artefacts to henna, spices to jewelry, Arabic perfumes to clothing and accessories.

SHORES: Innovating Resilience, Energy, and Sustainability



Sand Hazards and Opportunities in Resilience, Energy, and Sustainability

Funded by the New York University Abu Dhabi Institute and the Abu Dhabi government, SHORES was officially inaugurated in September 2023. The center focuses on three key themes: **Resilience, Energy, and Sustainability**.

In its first year, SHORES has achieved significant milestones in applied and fundamental research, including:

- Infrastructure integrity
- Smart and sustainable materials
- Automation in construction
- Digital twin development for engineering systems
- Geomechanics for energy applications

SHORES embodies a cross-disciplinary vision, fostering collaboration among global academics and industry leaders to drive innovation in sustainable infrastructure and energy systems.

Join us in building a resilient, sustainable future!

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