

# IS-Macau 2024

11<sup>th</sup> International Symposium of Geotechnical Aspects of  
Underground Construction in Soft Ground

June 14-17, 2024 Macao SAR, China

## 14/06/2024 Friday

15:00-18:00 Registration and welcome reception, N1 Multi-function Hall (G008), University of Macau

15:00-17:00 TC 204 meeting, Room 5010, N21 Building, University of Macau

## 15/06/2024 Saturday

## Student Activity Centre E31, University of Macau

From 8:00

Registration

**Opening Ceremony** MC: *Quan Sun, University of Macau*  
Cheng-Zhong Xu, Dean of Faculty of Science and Technology, University of Macau  
9:00-9:30 Peng Kong Ao, Honorary Chair of IS-Macau 2024, President of LECM  
Giulia Viggiani, TC204 Chair, University of Cambridge  
Albert Shou, Vice President Asia of ISSMGE

Session

Chairs

9:30-10:15 **Keynote Lecture**  
Exploiting the Renewable Energy Resources of Our Cities' Underground  
*Lyesse Laloui, Swiss Federal Institute of Technology (EPFL)*

**Feng Zhang**  
*Tongji University*  
**Hannah Zhou**  
*University of Macau*

10:15-11:35 **Plenary Session 1** Basic Properties and Soil Improvement in Soft Ground  
General Reporter: *Shuying Wang, Shenzhen University*  
1. Analysis of Soil Clogging of TBM Tunneling in Clayey Layers and the Role of Soil Compositions  
*Gang Wang, Institute of Rock and Soil Mechanics, Chinese Academy of Sciences*  
2. Improved Determination of the Constrained Modulus in Soft Soils Using the Flat Dilatometer Test  
*Simon Oberhollenzer, Norwegian Geotechnical Institute*  
3. Permeability and Strength of Sand-bentonite Mixture Stabilized By Different Binders for Construction of Two-phase Cut-off Walls  
*Matthew Zhi Yeon Ting, Nanyang Technological University*

**Yaolin Yi**  
*Nanyang Technological University*  
**Jiazheng Zhong**  
*University of Macau*

11:35-11:55

Coffee break

11:55-12:40	<p><b>Fujita Lecture</b></p> <p>Interactions at the Front Face of EPB Shield When Drilling in Sand  <i>Adam Bezuijen, Ghent University</i></p>	<p><b>Giulia Viggiani</b>  <i>Cambridge University</i>  <b>Tao Xu</b>  <i>Southeast University</i></p>
12:40-13:15	<p><b>Bright Spark Lecture</b></p> <p>Resilience Assessment of Tunnels: Framework and Application for Tunnels Exposed to Seismic Hazard  <i>Zhongkai Huang, Tongji University</i></p>	<p><b>Albert Shou</b>  <i>VP Asia of ISSMGE</i>  <b>Thomas Man Hoi Lok</b>  <i>University of Macau</i></p>
13:15-14:15	Lunch break	
14:15-15:35	<p><b>Plenary Session 2</b> Field Case Studies</p> <p>General Reporter: <i>Daniela Boldini, Sapienza University of Rome</i></p> <p>1. Modelling of Large Diameter TBM Tunnelling beneath New Reclamation  <i>Siew Wei Lee, AECOM Asia Company Limited</i></p> <p>2. Investigating Transient Tunnelling-induced Ground Surface Responses  <i>Shuai Xue, Imperial College London</i></p> <p>3. Case Study of Soil-structure Interaction during Tunnelling for Barcelona Metro: a Comparison between Conventional and Innovative Displacement Measurements  <i>Alessandra Di Mariano, Universitat Politècnica de Catalunya · Barcelona Tech</i></p>	<p><b>Benson Hsiung</b>  <i>Chair of AsRTC6</i>  <i>ISSMGE</i>  <b>Zheng Guan</b>  <i>University of Macau</i></p>
15:35-15:55	Coffee break	
15:55-17:15	<p><b>Plenary Session 3</b> Constitutive and Numerical Modelling</p> <p>General Reporter: <i>Zhenyu Yin, The Hong Kong Polytechnic University</i></p> <p>1. Effect of Infill Nonlinearity on Frame Response to Tunnelling  <i>Yalin Yu, Qilu Institute of Technology</i></p> <p>2. 3D Numerical Modelling of a Compensation Grouting Field Trial in Alluvial Soils  <i>Edoardo Lusini, Sapienza University of Rome</i></p> <p>3. A Continuum Analysis of Piles Affected by an Advancing Tunnel Excavation during Centrifuge Tests with a Miniature TBM  <i>Eugene Kwan Lok Wong, University of Cambridge</i></p>	<p><b>Dong Su</b>  <i>Shenzhen University</i>  <b>Jiale Lin</b>  <i>University of Macau</i></p>
17:15-18:00	<p><b>Keynote Lecture</b></p> <p>Learning from Failures in Shallow NATM Tunnel  <i>Wei Wu, Universität für Bodenkultur Wien (BOKU)</i></p>	<p><b>Lyesse Laloui</b>  <i>Swiss Federal Institute of Technology (EPFL)</i>  <b>Zhenyu Yin</b>  <i>The Hong Kong Polytechnic University</i></p>
19:00	Banquet, Oasis at Galaxy Hotel	

16/06/2024 Sunday		Student Activity Centre E31, University of Macau	
From 8:30	Registration		
9:00-9:45	<b>Keynote Lecture</b> Three Implementations to Reduce Geotechnical Risk on Underground Projects using Information Engineering and AI <i>Michael Mooney, Colorado School of Mines</i>	<b>Renpeng Chen</b> <i>Hunan University</i> <b>Dongmei Zhang</b> <i>Tongji University</i>	
9:45-11:05	<b>Plenary Session 4</b> Sustainability and Resilience of Underground Infrastructure  General Reporter: <i>Andrea Franza, Aarhus University</i>  1. Post-tensioned Waler System (PWS) as Supporting Structure for Deep Excavations <i>Kalyanasundaram Balamonica, Singapore Institute of Technology</i> 2. An ArcGIS Toolbox for the Probabilistic Performance-based Assessment of Surface Building Damage in Large-scale Urban Excavations <i>Jinyan Zhao, UC Berkeley</i> 3. Soil Disturbance Evaluation in a Typical Soft Clay Excavation Pit <i>Yan-Guo Zhou, Zhejiang University</i>	<b>Daniela Boldini</b> <i>Sapienza University of Rome</i> <b>Xue Li</b> <i>University of Macau</i>	
11:05-11:45	Poster presentation / Coffee break		
11:45-12:30	<b>Keynote Lecture</b> Deformation of Shield Tunnels Induced by Adjacent Construction <i>Renpeng Chen, Hunan University</i>	<b>Wei Wu</b> <i>Universität für Bodenkultur Wien (BOKU)</i> <b>Yan-Guo Zhou</b> <i>Zhejiang University</i>	
12:30-13:10	<b>Roundtable Discussion</b> “Underground Construction in Historic Areas” and “Tunnelling Across Sea and Coastal Zones” Moderators: <i>Peng Kong Ao, LECM &amp; Hannah Wan-Huan Zhou, University of Macau</i> Speakers: <i>Adam Bezuijen, Ghent University</i> <i>Wout Broere, Delft University of Technology</i> <i>Renpeng Chen, Hunan University</i> <i>Lyesse Laloui, Swiss Federal Institute of Technology (EPFL)</i> <i>Giulia Viggiani, Cambridge University</i> <i>Wei Wu, Universität für Bodenkultur Wien (BOKU)</i>		
13:10-13:15	<b>Poster Award Presentation</b>		
13:15-14:15	Lunch break		

14:15-15:35	<p><b>Plenary Session 5</b> Innovative Analysis and Design in Tunneling and Underground Construction</p> <p>General Reporter: <i>Dongmei Zhang, Tongji University</i></p> <p>1. Algorithm on Setting Correction Alignment for TBM Meandering <i>Huynh Le Chu An, Nagaoka University of Technology</i></p> <p>2. Dynamically Updating Geological Uncertainty Simulation with the Process of Tunnel Excavation <i>Jinzhang Zhang, Tongji University</i></p> <p>3. Settlement Prediction of the Hong Kong-Zhuhai-Macau Bridge Tunnel Under the Effect of Typhoon <i>Shuyu He, University of Macau</i></p>	<p><b>Jamie Standing</b> <i>Imperial College London</i></p> <p><b>Liang Gao</b> <i>University of Macau</i></p>
15:35-15:55	Coffee break	
15:55-17:15	<p><b>Plenary Session 6</b> Smart Monitoring and Visualization Technologies for Tunneling and Underground Construction</p> <p>General Reporter: <i>Mohammed Zein Elabidin Babiker Elshafie, Qatar University</i></p> <p>1. Control of Grouting in the Bedrock and Soil in Vicinity of Tunnels and Construction Pits, Case Study: E18, Oslo, Norway <i>Siamak Feizi, Norwegian Geotechnical Institute</i></p> <p>2. Least Squares Adjustment Approach in Real-time Monitoring of Existing Twin Tunnels <i>Benson Hsiung, Chair of AsRTC6 ISSMGE</i></p> <p>3. Coupled Centrifuge-Numerical Modelling of Shallow Strip Foundations <i>Chuanjin Tang, University of Nottingham</i></p>	<p><b>Weiqiang Feng</b> <i>Southern University of Science and Technology</i></p> <p><b>Ping Shen</b> <i>University of Macau</i></p>
17:15-18:00	<p><b>Keynote Lecture</b></p> <p>Smart Monitoring of Tunnels <i>Wout Broere, Delft University of Technology</i></p>	<p><b>Adam Bezuijen</b> <i>Ghent University</i></p> <p><b>Hanlin Wang</b> <i>Hunan University</i></p>
18:00	Closing Ceremony	
<b>17/06/2024 Monday</b>		
9:00-12:00	Field trip	