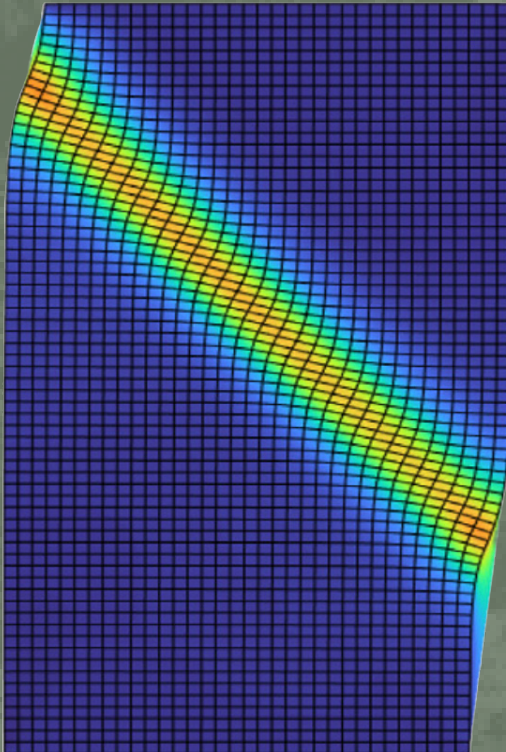


# 13th International Workshop on Bifurcation and Degradation in Geomaterials

June 22-25, 2026, Vienna, Austria



Programme book

# General Information

## Location and conference information

Welcome Reception	Mon, 22 June 2026, 18:00	BOKU	An informal welcome reception is planned.
Opening Ceremony	Tue, 23 June, 08:45-09:00	BOKU	Official opening of the workshop.
Conference Banquet	Tue, 23 June, 19:00-22:30	Plachutta Gruenspan	Traditional Viennese tavern
Musical	Wed, 24 June, 18:30-21:00	Raimund Theater	Musical Evening: The Phantom of the Opera
Closing words	Thu, 25 June, 12:00-12:10	BOKU	End of workshop.

## Registration and Information Desk

The registration desk opens on Monday afternoon before the Welcome Reception. Organiser support remains available during the technical programme.

Mon, 22 June, 15:00-21:00	Registration / check-in	Onsite desk
Technical sessions and breaks	Organiser support	Available throughout the programme

## Internet

Wireless internet details will be announced at check-in or displayed onsite.

## Lunch

Tue, 23 June, 12:30-14:00	Lunch break	Venue details announced onsite.
Wed, 24 June, 12:30-14:00	Lunch break	Venue details announced onsite.
Thu, 25 June, 12:10-14:00	Lunch	Venue details announced onsite.

## Oral Presentation

Each oral presentation slot is 20 min. Please arrive before your session begins and share your slides with the chair or organisers in advance when possible.

*Dear Colleagues,*

It is our great pleasure to welcome you to IWBDG 2026 in Vienna. This workshop brings together researchers from many parts of the world to present recent advances in geomechanics research. The broad spectrum of topics includes, but is not limited to, instability and localisation in geomaterials, constitutive modelling, granular mechanics, rock mechanics and fracture, coupled THM processes, experiments, and advanced computational methods.

The oral presentations are arranged in a single-track format across ten sessions, creating opportunities for discussion and interaction throughout the meeting. We thank all authors and participants for contributing to this high-level scientific event and wish you a productive and enjoyable workshop in Vienna.

*Wei Wu*

Conference chairman

# Program overview

Monday 22 June 2026	Tuesday 23 June 2026	Wednesday 24 June 2026	Thursday 25 June 2026
Registration	08:45-09:00 Opening		
	09:00-10:20 S1 Technical Session	09:00-10:20 S5 Technical Session	09:00-10:20 S9 Technical Session
	10:20-10:40 Coffee	10:20-10:40 Coffee	10:20-10:40 Coffee
	10:40-12:20 S2 Technical Session	10:40-12:20 S6 Technical Session	10:40-12:00 S10 Technical Session
			12:00-12:10 Closing
	12:30-14:00 Lunch	12:30-14:00 Lunch	12:10-14:00 Lunch
	14:00-15:20 S3 Technical Session	14:00-15:20 S7 Technical Session	
	15:20-15:40 Coffee	15:20-15:40 Coffee	
	15:40-17:00 S4 Technical Session	15:40-16:40 S8 Technical Session	
18:00 Welcome Reception	19:00-22:30 Conference Banquet	18:30-21:00 Musical	

# Social events

The teacher-approved timetable includes a Monday Welcome Barbecue plus the two booked evening events highlighted below.

Your name badge is required for admission to organised events.

## 1. Conference Banquet at Plachutta Gruenspan

Tuesday, 23 June 2026, 19:00-22:30

Address: Ottakringerstrasse 266

Plachutta Gruenspan is a traditional Viennese tavern in the historic beer district of Vienna, known for Austrian pub cuisine, Plachutta classics and a spacious beer garden. The conference banquet provides a relaxed setting to meet fellow participants and continue discussions after the first full technical day.



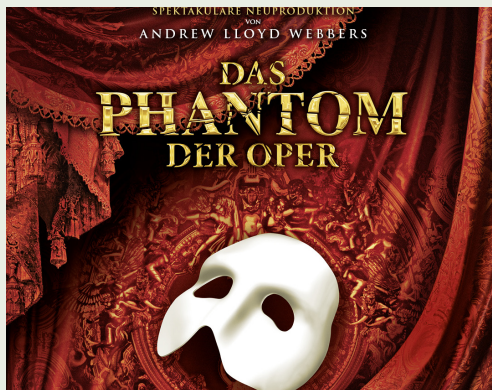
## 2. Musical Evening: The Phantom of the Opera

Wednesday, 24 June 2026, 18:30-21:00

Raimund Theater, Vienna

Address: Wallgasse 18-20, 1060 Vienna

Duration: approx. 2 h 30 min



One of the most celebrated musicals of all time has returned to Vienna. After the success of CATS, Vereinigte Buehnen Wien brought Andrew Lloyd Webber masterpiece back to the city in Cameron Mackintosh spectacular new production, presented for the first time in the German-speaking world. With its famous score, lavish stage imagery and grand theatrical atmosphere, the show offers a classic musical evening at the Raimund Theater. Presented in German with English surtitles, the Vienna staging brings the iconic chandelier, sweeping romance and large-scale theatrical effects back to the stage in a landmark musical production.

# Technical Session 1

## 13th Bifurcation and Degradation in Geomaterials

Tuesday, 23 June 2026 | 09:00-10:20

**09:00-09:20**      **Partial second gradient regularization applied to shear band modelling.**

*Denis Caillerie; Pierre Bésuelle*

*Speaker: Denis Caillerie, Université Grenoble-Alpes, France*

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**09:20-09:40**      **Geochemistry-driven chemo-mechanical bifurcation and degradation of granite: implications for Li-enrichment in the Cooper Basin, Australia**

*Yongqiang Chen; Quan Xie; Klaus Regenauer-Lieb*

*Speaker: Yongqiang Chen, Curtin University, Australia*

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**09:40-10:00**      **Length-regularized B-spline material point method for discretization-insensitive strain localization analysis**

*Jinhyun Choo*

*Speaker: Jinhyun Choo, Seoul National University, South Korea*

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**10:00-10:20**      **Is failure state of soil unique?**

*Jian Chu*

*Speaker: Jian Chu, Nanyang Technological University, Singapore*

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# Technical Session 2

## 13th Bifurcation and Degradation in Geomaterials

Tuesday, 23 June 2026 | 10:40-12:20

**10:40-11:00**      **The role of bedding planes orientation and true triaxial loading on the macroscopic response and strain localization pattern in a porous sandstone**

*Cyrille Couture; Pierre Bésuelle*

*Speaker: Cyrille Couture, Université Grenoble-Alpes, France*

**11:00-11:20**      **Large strain rate constant volume simple shear strain localization in granular media**

*Claudio G. di Prisco; Matteo Zerbi; Alessandro Leonardi*

*Speaker: Claudio G. di Prisco, Politecnico di Milano, Italy*

**11:20-11:40**      **Particle equilibrium based exact equation for average interparticle forces in granular materials**

*Ge Duan; Chaofa Zhao*

*Speaker: Ge Duan, Zhejiang University, China*

**11:40-12:00**      **Rock spallation. Mechanism and energy release**

*Arcady Dyskin; Elena Pasternak*

*Speaker: Arcady Dyskin, The University of Western Australia, Australia*

**12:00-12:20**      **Discovering neural elastoplasticity from kinematic observations**

*Georgios Barkoulis Gavris; Steve WaiChing Sun*

*Speaker: Georgios Barkoulis Gavris, Columbia University, USA*

# Technical Session 3

## 13th Bifurcation and Degradation in Geomaterials

Tuesday, 23 June 2026 | 14:00-15:20

**14:00-14:20**      **On vertex instability of pressure-sensitive non-associated plasticity with Lode angle dependency**

*Paul Hofer; Matthias Neuner; Günter Hofstetter*

*Speaker: Paul Hofer, University of Innsbruck, Austria*

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**14:20-14:40**      **Modeling of non-coaxial deformation in sands: Roles of fabric anisotropy and non-proportional loading**

*Lei Huang; Zhongxuan Yang; Yannis F. Dafalias*

*Speaker: Lei Huang, Zhejiang University, China*

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**14:40-15:00**      **Short review of limestone rock masses geomechanical degradation and its peridynamic modelling perspective**

*Łukasz Kaczmarek; Yunteng Wang; Agnieszka Dąbska; Wei Wu; Katarzyna Misiótek; Bartosz Bednarz; Adam Kasprzak; Jiaxin Liu*

*Speaker: Łukasz Kaczmarek, Warsaw University of Technology, Poland*

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**15:00-15:20**      **Learning gravity-driven granular flows**

*Konstantinos Karapiperis*

*Speaker: Konstantinos Karapiperis, École Polytechnique Fédérale de Lausanne, Switzerland*

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# Technical Session 4

## 13th Bifurcation and Degradation in Geomaterials

Tuesday, 23 June 2026 | 15:40-17:00

**15:40-16:00**      **Microscopic evolution of pore water characteristics in partially saturated sand associated with development of dilative shear bands**

*Ryunosuke Kido; Yosuke Higo*

*Speaker: Ryunosuke Kido, Hiroshima University, Japan*

**16:00-16:20**      **Effects of fluid flow, particle fragmentation, and temperature on behavior of cohesive-frictional materials using a novel DEM-based thermal-hydro-mechanical model**

*Marek Krzaczek; Michał Nitka; Jacek Tejchman*

*Speaker: Marek Krzaczek, Gdańsk University of Technology, Poland*

**16:20-16:40**      **A unique DEM-based coupled 3D thermo-hydro-mechanical mesoscopic model incorporating phase changes for simulating of cohesive-frictional materials**

*Marek Krzaczek; Jacek Tejchman*

*Speaker: Marek Krzaczek, Gdańsk University of Technology, Poland*

**16:40-17:00**      **Constitutive modeling of soil liquefaction with automated parameter calibration and PINN-driven stress integration**

*Rui Wang; Bin Hu-Yan; Yunyi Li; Jianmin Zhang*

*Speaker: Rui Wang, Tsinghua University, China*

# Technical Session 5

## 13th Bifurcation and Degradation in Geomaterials

Wednesday, 24 June 2026 | 09:00-10:20

**09:00-09:20**      **Effective medium theory for micropolar granular elasticity**

*Xia Li; Zijun Shi; Muhammad Shahkar*

*Speaker: Xia Li, Southeast University, China*

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**09:20-09:40**      **Micro-macro methods: states and transitions**

*Stefan Luding*

*Speaker: Stefan Luding, University of Twente, Netherlands*

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**09:40-10:00**      **Mechanical behavior of sedimented clay in relation to their initial microstructure**

*Mengyu Ma; Fares Bennaia; Mahdia Hattab; Pierre-Yves Hicher; François Nicot*

*Speaker: Mengyu Ma, Université de Lorraine, France*

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**10:00-10:20**      **Numerical investigation of the influence of material heterogeneity on strain localisation development**

*Lou-Anne Marchadour; Pierre Bésuelle; Quentin Rousseau*

*Speaker: Lou-Anne Marchadour, Université Grenoble-Alpes, France*

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# Technical Session 6

## 13th Bifurcation and Degradation in Geomaterials

Wednesday, 24 June 2026 | 10:40-12:20

**10:40-11:00**      **On the definition of the tensor  $A$  in hypoplastic constitutive models for sand**

*Luis Mugele; David Mašin; Hans H. Stutz*

*Speaker: Luis Mugele, Karlsruhe Institute of Technology, Germany*

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**11:00-11:20**      **Beyond the bifurcation in geomaterials: controlling snapback response and strain rate inside the localisation zone**

*Giang D. Nguyen; Nhan T. Nguyen; Murat Karakus; Ha H. Bui*

*Speaker: Giang D. Nguyen, Adelaide University, Australia*

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**11:20-11:40**      **Granular materials and thermodynamics: the missing link**

*François Nicot; Xiaoxiao Wang; Antoine Wautier; Richard Wan; Félix Darve*

*Speaker: François Nicot, Université Savoie Mont Blanc, France*

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**11:40-12:00**      **Emergence of shear localization around the advancing cone tip in PFEM simulations of CPTu tests on a saturated structured clay**

*Kateryna Oliynyk; Matteo O. Ciantia; Claudio Tamagnini*

*Speaker: Kateryna Oliynyk, University of Dundee, UK*

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**12:00-12:20**      **Fractures with constricted opening across the scales**

*Elena Pasternak; Arcady Dyskin*

*Speaker: Elena Pasternak, The University of Western Australia, Australia*

# Technical Session 7

## 13th Bifurcation and Degradation in Geomaterials

Wednesday, 24 June 2026 | 14:00-15:20

**14:00-14:20**      **Unified Peridynamic modeling of THM coupled fracturing problems in geomechanics**

*Jidong Zhao; Changyi Yang*

*Speaker: Jidong Zhao, The Hong Kong University of Science and Technology, China*

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**14:20-14:40**      **Insights into the potential of ALE and CEL analyses for large deformations in geomechanics**

*Frank Rackwitz*

*Speaker: Frank Rackwitz, Technische Universität Berlin, Germany*

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**14:40-15:00**      **Chemo-mechanical bifurcation and deformation band formation in low-permeability granite**

*Klaus Regenauer-Lieb; Yongqiang Chen; Sam Xie*

*Speaker: Klaus Regenauer-Lieb, Curtin University, Australia*

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**15:00-15:20**      **A numerical study of the role of water phase change in the propagation of catastrophic landslides with reference to Vaiont landslide (Italy, 1963)**

*Lorenzo Sanavia; Maria Lazari; Chiara Montorio*

*Speaker: Lorenzo Sanavia, University of Padua, Italy*

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# Technical Session 8

## 13th Bifurcation and Degradation in Geomaterials

Wednesday, 24 June 2026 | 15:40-16:40

**15:40-16:00**      **3D centrifuge model tests and numerical simulations of bearing capacity problems**

*Yoshiteru Teranaka; Shigeaki Oka; Hideaki Takahashi; Noboru Nakatani; Takahiro Konda; Teruo Nakai*

*Speaker: Yoshiteru Teranaka, Tokyo Electric Power Company, Japan*

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**16:00-16:20**      **Multiscale bifurcation analysis in granular materials: discrete-continuum duality**

*Richard Wan; Mojtaba Farahnak; Mehdi Pouragha; François Nicot*

*Speaker: Richard Wan, University of Calgary, Canada*

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**16:20-16:40**      **Hydraulic hysteresis as a degradation mechanism promoting localisation in unsaturated slopes under intermittent rainfall**

*Jialu Wang; Ha H. Bui; Giang D. Nguyen*

*Speaker: Jialu Wang, Monash University, Australia*

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# Technical Session 9

## 13th Bifurcation and Degradation in Geomaterials

Thursday, 25 June 2026 | 09:00-10:20

**09:00-09:20**      **Numerical analysis of shear and compaction bands in dry and saturated porous rocks with a microstructure-based non-local plastic model**

*Jun Wu; Wei Wang; John Rudnicki; Jianfu Shao*

*Speaker: Jun Wu, University of Lille, France*

**09:20-09:40**      **Synergistic mechanism and failure evolution process of pile-anchor structure reinforced rock slope based on centrifuge shaking table tests**

*Xi Xu; Xiuli Du; Wei Wu; Yu Huang*

*Speaker: Xi Xu, Beijing University of Technology, China*

**09:40-10:00**      **Controllability criteria for bridging bifurcation and progressive localization in geomaterials**

*Dawei Xue; Xilin Lu; Jiangu Qian; Giuseppe Buscarnera*

*Speaker: Dawei Xue, Tongji University, China*

**10:00-10:20**      **Friction and dilatancy of geomaterials: Another look**

*Jun Yang; Runze Zhang; Zhi Liu*

*Speaker: Jun Yang, The University of Hong Kong, China*

# Technical Session 10

## 13th Bifurcation and Degradation in Geomaterials

Thursday, 25 June 2026 | 10:40-12:00

**10:40-11:00**      **The reinforcing mechanism of disposable face mask chips in sand: insights from numerical analysis and experiments**

*Zhen-Yu Yin*

*Speaker: Zhen-Yu Yin, The Hong Kong Polytechnic University, China*

**11:00-11:20**      **Micromechanical insights into the influence of cementation on shear localisation in cemented sands**

*Aoxi Zhang; Antoine Wautier; Frédéric Collin; Anne-Catherine Dieudonné*

*Speaker: Antoine Wautier, French National Research Institute for Agriculture, Food and Environment, France*

**11:20-11:40**      **Particle size effect in gap-graded soil-rock mixture: a large-scale triaxial test investigation**

*Pei Zhang; Changsheng Zou; Jie Yang; Shiwei Hou; Xiuli Du*

*Speaker: Pei Zhang, Beijing University of Civil Engineering and Architecture, China*

**11:40-12:00**      **Fractional derivative modeling approaches to rock mechanics**

*Hongwei Zhou*

*Speaker: Hongwei Zhou, China University of Mining and Technology, China*

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IWBDG 2026  
Workshop programme  
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