

# THURSDAY, OCTOBER 12

PAPAGENO HALL		MOZART HALL		EUROPA HALL		TRAKL HALL		DOPPLER HALL	
NUMERICAL METHODS IN ROCK ENGINEERING (T13) Chair: Helmut F. SCHWEIGER, Daniela BOLDINI Room: Papageno Hall (ground floor)		ROCK SLOPE ENGINEERING (T17) Chair: Alexander PREH, Johann Thomas SAUSGRUBER Room: Mozart Hall (ground floor)		ROCK AND ROCK MASS PROPERTIES (T15) Chair: Andreas GÖRICKI, Thomas FRUHWIRT Room: Europa Hall (2nd upper floor)		LONG-TERM BEHAVIOUR OF UNDERGROUND STRUCTURES (T09) Chair: Bernd A. MORITZ, Thomas PILGERSTÖRFER Room: Trakl Hall (3rd upper floor)		MONITORING (T10) Chair: Werner LIENHART, Urs H. GRUNICKE Room: Doppler Hall (4th upper floor)	
08:30 a.m.	Modelling brittle rock mass behaviour in deep underground excavations Giuseppe CAMMARATA, Davide ELMO, Sandro BRASILE	08:30 a.m.	Activity and kinematic behaviors of gravitational slope deformation in the slate belt of Taiwan Cheng-Hsin LIN, Ming-Lang LIN	08:30 a.m.	Physical Modeling in Rock Mechanics and Rock Engineering Herbert H. EINSTEIN	08:30 a.m.	Data and analytical mechanics: a new look on NATM tunnels Raphael SCHARF, Bernhard PICHLER, Roman HEISENBERGER, Bernd MORITZ, Christian HELLMICH	08:30 a.m.	Distributed Fiber Optic Monitoring Systems in Tunneling: Implementation from research into practice Christoph Martin MONSBERGER, Fabian BUCHMAYER, Werner LIENHART
08:45 a.m.	Anisotropy Effects on the Response of Deep Tunnels Excavated in Claystone Miguel Angel MÁNICA, Antonio GENS, Jean VAUNAT, Gilles ARMAND, Minh-ngoc VU	08:45 a.m.	The influence of a heavy storm on a slope subject to rockfall phenomena: the Bazena case study Battista TABONI, Gessica UMLU, Anna Maria FERRERO, Simone BLANC, Filippo BRUN, Stefano BRUZZESE, Luca M. ALBERTELLI, Liri D. TAGLIAFERRI	09:00 a.m.	The Interplay between Geometry and THMC Processes Mengsu HU, Laura PYRAK-NOLTE	08:45 a.m.	Investigating the impact of viscoelastic material models for accurate stress estimation in precast concrete tunnel segments Ali RAZGOZOVANISHARI, Maximilian SÖRGNER, Adolf Bernd MORITZ, Thomas PILGERSTÖRFER, Bernhard L. PICHLER, Christian HELLMICH	08:45 a.m.	Development of tunnel pre-displacement measurement method by fiber optic sensing Kazuo SAKAI, Toshitumi AKAI, Yoshimi OHNISHI, Shigeru TANAKA, Tomonori HORIDOME
09:00 a.m.	Numerical investigation of the behaviour of underground strata reinforced with polymer liner, steel mesh and bolts subjected to buckling failure Saurav KARRI, Jan PORTER, Shivakumar KAREKAL	09:00 a.m.	Rock slope stability management along the road by machine learning through databasing disaster prevention records Hirofumi HONDA, Yasuhito MITANI, Hisatoshi TANIGUCHI, Ibrahim DJAMALUDDIN, Yurnio KAWAURA	09:30 a.m.	A modification of nonlinear Forchheimer's coefficient for fracture flow during shear Min GAO, Xu ZHU, Chengyu ZHANG, Joungh OH	09:00 a.m.	Dissolution and precipitation processes governing the hydration heat development in tunnel cements: Green's function-based estimation of heat release in modified calorimetric tests Hermann HÖLD, Bernhard PICHLER, Helmut RECHBERGER, Philipp ASCHENBRENNER, Christian HELLMICH	09:00 a.m.	Long-term monitoring of Austrian railway tunnels – A next step forward Adolf Bernd MORITZ, Johannes FLECKL, Werner LIENHART, Johann GÖLSER, Thomas PILGERSTÖRFER
09:15 a.m.	Analyzing numerical grouted rockbolt behaviour in jointed pseudo-discontinuum models Cattlin FISCHER, Mark DIEDERICHS	09:15 a.m.	The Correct Way to use the Hoek-Brown Strength Criterion for Slope Stability Analysis on the Example of Vals (Tyrol/Austria) Marella ILIEDTSCHE, Alexander PREH, Johann Thomas SAUSGRUBER	09:45 a.m.	Temperature-dependent strength of ice-filled discontinuities in frozen and thawing rock masses Greg GAMBINO, John P. HARRISON	09:15 a.m.	Effects of water on the time dependent properties of rock Kimihito HASHIBA, Katsunori FUKUI	09:15 a.m.	Sinkholes and underground mining activities: the key role of monitoring for the hazard assessment and mitigation Bartolomeo VIGNA, Adriano FIORUCCI, Federico VAGNONI, Marco BARALE
09:30 a.m.	On advanced numerical techniques for the modeling of bolt reinforced rock mass Tüan Anh BUI, Giuseppe CAMMARATA, Varun Choudary KANCHARLA, Ronald BRINKGREVE, Sandro BRASILE	09:30 a.m.	The Correct Way to use the Hoek-Brown Strength Criterion for Slope Stability Analysis on the Example of Vals (Tyrol/Austria) Marella ILIEDTSCHE, Alexander PREH, Johann Thomas SAUSGRUBER	09:45 a.m.	Low-temperature Thermal diffusion in Rock Zhiqiang LIU, Linlin WANG, Shihui YU	09:30 a.m.	Time-dependency and long-term strength of rocks in brittle underground environments – from the lab results to numerical continuum analysis Chrysothemis PARASKEVOPOULOU, James INNOCENTE, Mark McDONALD, Mark DIEDERICHS	09:30 a.m.	Next-generation high-resolution borehole tensor strainmeters for the measurement of six strain-components based on fully automated interferometric displacement sensors Jiyang TIAN, Kanghua ZHANG, Jiaohu LIU
09:45 a.m.	Modeling of joints of segment linings under complex relation between lining and ground conditions Kyeonghye AHN, Amade POUTA, Gye-Chun CHO	09:45 a.m.	Interaction between tunnels and slopes. Analysis of weak rock masses considering the Hoek-Brown failure criterion Carlos Luis GARRIDO GARRIDO, Sergio SÁNCHEZ RODRÍGUEZ, Paula DEL POZO GARCÍA	10:00 a.m.	Thermal degradation study of Westerly granite by ultrasonic sounding and mercury porosimetry Tomas LOKAJČEK, Daniela RIMNÁČOVÁ, Richard PRKRYL, Ali AMINZADEH, Matej PETRUZÁLEK	09:45 a.m.	Numerical simulation of nuclide transport at the underground repository scale subjected to thermal loading Jintong ZHANG, Zhilong ZHAO, Junyu CHEN, Xingguang ZHAO, Ju WANG	09:45 a.m.	Analysis of the evolution of a reclaimed coal mining area using historical aerial photographs Roberto SARRÓ, Juan LOPEZ-VINELLES, Adrián RIQUELME, Mónica MARTÍNEZ-CORBELLA, Juan Carlos GARCÍA-DUVALLO, Augusto RODRÍGUEZ, José Antonio FERNÁNDEZ-MERODO, Ángela SUÁREZ-RODRÍGUEZ, Mario HERNÁNDEZ, Rosa María MATEOS, Mercedes FERRER, Jaquín MULAS
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10:45 a.m.	FDEM modelling of hydraulic fracturing in jointed rocks Mansour SHARAFISAFA, Zehab ALUABADIAN, Akira SATO, Luming SHEN	10:45 a.m.	Developing a Digital Twin: A Semi-Brittle Slope Failure Case Study from Pueblo Viejo Gold Mine Micosoy BAUTISTA, Juan Carlos COBIAN SALAS, Jessica LOPEZ, Neil BAR, Niccolò COLI, Francesco COPPI, Andreas GAICH, Markus POTTSCH, Miriam BAUMGARTNER, Alison MCQUILLAN	10:45 a.m.	Direct shear tests on large natural and artificially induced rock fractures in a new laboratory equipment Lars JACOBSSON, Mathias FLANSJÖBERG, Jörgen LARSSON	11:00 a.m.	Eighteen years of feedback on the mechanical behavior of a 500m deep shaft on the Meuse/Haute-Marne (MHM) Andra's URL (France) Jana JABER, Carlos PLUA, Minh-Ngoc VU, Gilles ARMAND, Jod ZGHONDI	11:00 a.m.	Monitoring and analysis of the behavior of the Salzburg-Clay during the jet grouting works for the S-LINK project Albert GREINMEISTER, Johann GÖLSER, Alexander RADINGER, Gernot JEUTSCHKA, Manfred EDER, Michael FELDINGER, Franz RATHMAIR, Erich SAURER
11:00 a.m.	Numerical modelling of the swelling of clayey geomaterials by a multiscale approach Hamza MHAJMI ALAOUI, Richard GIOT, Dimitri PRÉT, Philippe COSEZKA, Stephen HEDAN	11:00 a.m.	Comparing different rock mass classifications using field and point load data on a rock cut Dragana SLAVKOVIĆ, Aljoša MITIĆ, Miloš MARIANOVIĆ	11:00 a.m.	Physical modelling of bimocks in large scale direct shear apparatus Mirolad JOVANOVIŠKI, Jovan Br. PAPIC, Igor PESHEVSKI	11:15 a.m.	Evolution of spalling-inducing fractures around a deep geological repository for nuclear waste during glaciations and their effect on the long-term repository stability M. Cristina SCAECANI, Adriana PALUSZNY, Robert W. ZIMMERMAN, Diego MAS JUVARS	11:15 a.m.	Regression analysis of slope instabilities evolution for time of failure estimation Alberto MICHELINI
11:15 a.m.	A numerical modelling study of the effect of pillar shape on pillar strength Jan Abram MARITZ, Daniel Francois MALAN	11:15 a.m.	Sub-critical crack growth based time-dependent deformation model and its application to open-pit slope stability Zhu LU, Zhiguo LI, Tianhong YANG, Xiaobang ZHENG, Wancheng ZHAO, Tengfei FU	11:15 a.m.	A Study on Dynamic Shear Properties of Bimrock Naoki TUNAR OZCAN, Eilif AUSAER	11:30 a.m.	Crush Pillars' Behaviour at Intermediate Depth on Merensky Reef Thomas J. VAN MTHOMBESE, Shane K. DURRANT, Richard T. MASETHE	11:30 a.m.	Use of combined monitoring remote sensing techniques for the study of active fractures in a remote area: Case of Cima Del Sirmio rockslide Charlotte WOLFF, Tigris CHOANLI, Marc-Henri DERRON, LU FEI, Michele JABOYEDOFF, Andrea PEDRAZZINI, Carlo RIVOLTA
12:00 p.m.	Analysing the influence of finite deformations treatment towards the safety assessment of nuclear waste repositories Steffen BEISE, Ralf EICKEMEIER, Jobs MASSMANN, Sandra FAHLAND	12:00 p.m.	Site specific joint spacing distribution of roadcut slopes in a selected stretch of national highway in Indian Garwhal Himalayas Lal HIRAKANTA, Mahendra SINGH, Sarada Prasad PRADHAN, Jaspreet SINGH	12:00 p.m.	Practical estimation of veinlets shear strength properties in hypogene rock mass Esteban HORMAZABAL, Andrea RUSSO	12:00 p.m.	Design of underground structures and support systems for extraction of inclined coal seam Arka Jyoti DAS, Prashant Kumar MANDAL, Ranjan KUMAR	12:00 p.m.	Monitoring the rock-mechanical safety of underground limestone quarries using fibre optic sensing technology UD NOORDERMEER, Roland BEKENDAM, Karlijn BEERS, Auke NACHENIUS, Devez KARABACAK
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12:45 p.m.	Analysing the influence of finite deformations treatment towards the safety assessment of nuclear waste repositories Steffen BEISE, Ralf EICKEMEIER, Jobs MASSMANN, Sandra FAHLAND	12:45 p.m.	Site specific joint spacing distribution of roadcut slopes in a selected stretch of national highway in Indian Garwhal Himalayas Lal HIRAKANTA, Mahendra SINGH, Sarada Prasad PRADHAN, Jaspreet SINGH	12:45 p.m.	Practical estimation of veinlets shear strength properties in hypogene rock mass Esteban HORMAZABAL, Andrea RUSSO	12:45 p.m.	Design of underground structures and support systems for extraction of inclined coal seam Arka Jyoti DAS, Prashant Kumar MANDAL, Ranjan KUMAR	12:45 p.m.	Monitoring the rock-mechanical safety of underground limestone quarries using fibre optic sensing technology UD NOORDERMEER, Roland BEKENDAM, Karlijn BEERS, Auke NACHENIUS, Devez KARABACAK
COFFEE BREAK		COFFEE BREAK		COFFEE BREAK		COFFEE BREAK		COFFEE BREAK	
NUMERICAL METHODS IN ROCK ENGINEERING (T13) Chair: Helmut F. SCHWEIGER, Daniela BOLDINI Room: Papageno Hall (ground floor)		ROCK SLOPE ENGINEERING (T17) Chair: Alexander PREH, Johann Thomas SAUSGRUBER Room: Mozart Hall (ground floor)		ROCK AND ROCK MASS PROPERTIES (T15) Chair: Andreas GÖRICKI, Thomas FRUHWIRT Room: Europa Hall (2nd upper floor)		LONG-TERM BEHAVIOUR OF UNDERGROUND STRUCTURES (T09) Chair: Bernd A. MORITZ, Thomas PILGERSTÖRFER Room: Trakl Hall (3rd upper floor)		MONITORING (T10) Chair: Werner LIENHART, Urs H. GRUNICKE Room: Doppler Hall (4th upper floor)	
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NUMERICAL METHODS IN ROCK ENGINEERING (T13) Chair: Helmut F. SCHWEIGER, Daniela BOLDINI Room: Papageno Hall (ground floor)		ROCK SLOPE ENGINEERING (T17)<							