

ORAL PRESENTATION SESSIONS

May 8, 2019

SUMMIT HALL

10:10-12:00 Keynote Lectures

Chair: T. Kyoya **Co-Chair:** R. Ulusay

K1(0118): M. Hori: Application of high performance computing for earthquake hazard and disaster estimation

K2(0129): S. Durucan: Monitoring, assessment and mitigation of rock burst and gas outburst induced seismicity in longwall top coal caving mining

13:00-14:40 SK1: Underground Structures-1

Chair: Seokwon Jeon **Co-Chair:** Y. Ohta

TK1(0127) K. Shariar: Dynamic analysis and investigation of vibrations induced by train from the subway station

(0033) D. Morikawa: Bingham flow model by fully implicit SPH and its application to reinforce underground caves

(0053) M. Wani: Design of the Tsunami Protection wall against Mega Earthquakes and Huge Tsunamis

(0121) P. Yiouta-Mitra: Analytical and Numerical calculation of stresses and displacements around rectangular tunnel under SV waves in half space

(0131) T. Seiki: Consideration of structural stability for Oya underground quarry with dynamic response

15:00-17:00 S1: Underground Structures-2

Chair: K. Shariar **Co-Chair:** T. Seiki

(0062) Y. Ohta: An experimental study on the effects of earthquake faulting on rock engineering structures

(0056) Y. Chiu: Site characteristics of a rock tunnel based on field-monitored seismic response

(0061) C. Chang: AE and vibration monitoring on underground LPG storage caverns

(0106) K. Kiho: Attempt of Lignite Pit Exploration by Seismic Tomography using Directional Drilling Borehole

(0124) S. Sakurai: Aftershocks of Hyogo-ken Nanbu earthquake (M=7.3) whose epicenter was near the city of Kobe, Japan

(0086) K. Ota: Numerical analysis to evaluate repair work of swelling-rock damaged tunnels in the mountains

(0085) S.R. Naik: Effect of excavation of drives with blasting in paste-filled stopes on the mined-out zone

OCEAN HALL

13:00-14:40 SK2: Rock Slopes-1

Chair: H. Kumsar **Co-Chair:** T. Nishimura

TK2(0102) R. Ulusay: Assessment of complex large slope failure at Kışlaköy Open pit mine, Turkey

(0060) Y. Nikaïdo: The Numerical Studies for Fault Displacement Damage of Shih-Gang Dam in Chi-Chi Earthquake

(0113) S. Suzuki: Numerical Simulation of Rock Slope Failure with Dynamic Frictional Contact Based on Co-rotational Technique

(0125) T. Kawai: A study of formations of a sliding surface during an earthquake

(0111) H. Kumsar: Some considerations on the failure of Güney Waterfall, Denizli, Türkiye

15:00-17:00 S2: Laboratory Testing-1

Chair: F. Dai **Co-Chair:** K. Aoyagi

(0014) T. Yamabe: Determination of dynamic elastic properties from the frequency of natural vibration by using impact acoustics

(0065) K. Murakami: Evaluation of elastic region of the surrounding bedrock using the cyclic unconfined compression test of rocks

(0072) S. Jeon: Experimental study on dynamic fracturing behavior under blasting loading in PMMA

(0091) D. Asahina: Laboratory Observations of Fracture Plane Reactivation Induced by Pore Pressure in Kimachi Sandstone

(0041) J.W. Cho: Analysis of rock fracture toughness (mode I) by dynamics simulation code

(0079) J. Yoshida: Study on dynamic shear strength and deformation characteristics of rock discontinuity.

(0096) T. Dintwe: The behaviour of Oya tuff Pillars under static and shock loading

May 9, 2019

SUMMIT HALL

8:30-10:00 Keynote Lectures

Chair: Ö. Aydan **Co-Chair:** Y. Jiang

K3(0128) I. Canbulat: An overview of research into understanding coal burst

K4(0130) F. Dai: Fracture Tests on Rocks under Different Loading Rates: Progressive Fracture Mechanism and Rate Dependence of Fracturing Profiles

10:20-12:00 SK3: Underground Structures-3

Chair: I. Canbulat **Co-Chair:** W. Yao

TK3(0025) K. Kamemura: Seismic Response and Stability of Rock Tunnels - Its History and Problems Today –

(0040) Y. Jiang: Correlation between seismic damages to mountain tunnel and ground deformation: Case study on Tawarayama tunnel under the 2016 Kumamoto earthquake

(0049) Y. Ito: Seismic response analysis of the underground cavern type disposal facility

(0045) S. Rajasekharan: A study on the seismic behavior of underground tunnels, considering dynamic fault rupture, through large-scaled finite element analysis

(0126) N. Malistani: Key Technical Considerations on Rehabilitation of Existing Salang Tunnel, Afghanistan

13:00 - 15:00 S4: Rock Slopes-2

Chair: R. Ulusay **Co-Chair:** T. Ito (UR)

(0068) T. Nishimura: Numerical simulation on progressive failure in rock slope using a 3D lattice spring model

(0117) R. Karagüzel: Sinkholes Induced by Dewatering in an Open Pit Mine Case Study from a Coal Basin in Eastern Turkey

(0087) T.T. Wang: Physical model study on microtremor characteristics of rock block on slope

(0080) K. Uenishi: Failure patterns of granular slopes subjected to dynamic impact: Experimental observations

(0114) S. Moriguchi: Simulation-based optimal design approach for rockfall protection walls

(0018) S. Miki: Solid and water interaction analysis by NMM-DDA and MPS methods applied to large-scale landslide triggered by earthquake

(0039) H. Kumsar: Model tests on rock slopes prone to wedge sliding and some case histories from recent earthquakes

OCEAN HALL

10:20-12:00 S3: Masonry Structures and Monuments

Chair: S. Moriguchi **Co-Chair:** R. Hashimoto

- (0010) T. Takayanagi: Shake table experiments on masonry retaining wall reinforced with nails
- (0054) G. Ma: Study on the stability of stone wall in earthquake by discontinuous deformation analysis
- (0012) T. Sasaki: Seismic response analysis using a 4-node iso-parametric Numerical Manifold Method and 3D-Discontinuous Deformation Analysis
- (0082) T. Sueoka: Fundamental Study on the Dynamic Behavior of Japanese Castle Masonry Wall Using NMM-DDA
- (0029) M. Miyajima: Seismic Diagnosis of St. Stepanos Monastery in Iran
- (0022) J. Tomiyama: The numerical analysis of response and stability of stone masonry bridges in Aizanoi Antique City in Kütahya Province of Turkey

13:00 - 15:00 S5: Laboratory Testing-2

Chair: T. Koyama **Co-Chair:** G. Ma

- (0004): F. Dai: Experimental investigation on the fatigue mechanical properties of intermittent jointed rock under random cyclic uniaxial compression
- (0031) R. Kiyota: Experimental study of scale effect in rock discontinuities on stick-slip behavior
- (0070) S. Cho: Evaluation of the Dynamic Shear Strength of Rocks under Confining Pressure
- (0081) E. Nakaza: A new constitutive equation for a solid material
- (0036) M. Dello-Iacovo (S. Saydam): Measuring seismic properties of fine sediments in an off-Earth environment
- (0112) A. Taheri: Effect of Different Parameters on Post-Peak Response of Rocks
- (0021): W. Sukplum: Ultrasonic Wave Properties of Weathered Sandstones in Khorat Group and their Factors Affecting

May 10

SUMMIT HALL

8:30-9:20 Keynote Lecture

Chair: T. Ito (TU) **Co-Chair:** W. Lin

K5(0078) H. Ogasawara: Spatial variation in stress in seismogenic zones in South African gold mines

9:40-12:00 S6: Blasting/Rockburst/Outburst

Chair: S. Durucan **Co-Chair:** M. Sawada

(0034) D. Fukuda: Application of peridynamics to dynamic fracture process analysis of rock-like materials

(0037) K. Tsukamoto: Predicting seismic velocity distribution ahead of tunnel face using drilling vibration of hydraulic rock machine

(0133) M.I. Sharin: Numerical simulation of rock fragmentation by blasting using Discrete Element Method in LS-DYNA

(0071) T. Inuzuka: Application of advanced tunnel blasting technique for reducing vibration and optimizing the excavation advanced rate

(0028) K. Aoyagi: Fracture characterization and rock mass behavior induced by blasting and mechanical excavation of shafts in the Horonobe Underground Research Laboratory

(0089) Y. Li: A Verification and Validation of the multi-body dynamics based on impulse-based method

(0132) T. Tani: Tunnel Face Monitoring System for detecting and warning falling rocks

(0006) D.P. Guo: Dynamic damage constitutive relationship of mesoscopic heterogenous brittle rock under rotation of the principal stress axes

13:00-15:20 S8: Induced Seismicity/Strong Motion Simulation-1

Chair: S. Saydam **Co-Chair:** K. Uenishi

(0046) C. Li: Energy transformations related to rockburst in underground excavation

(0047) M. Kashiwayanagi: Study on amplification characteristics of seismicity at dam sites using monitored acceleration data, affected by disturbance of the nearby existing cavern

(0098) A. Sainoki: Methodology to back-analyze the slip-weakening distance of induced seismicity, considering seismic efficiency

(0088) N. Iwata: Effects of Fault geometry and subsurface structure model in strong motion and surface rupture induced by the 2014 Kamishiro Fault Nagano Earthquake

(0107) N. Iwata: Comparison of change of stress field around the fault by dynamic fault rupture simulation using 3D-FEM

- (0123) C. Wei: A parametric study of fault-slip in longwall mining
- (0073) M. Sawada: Analysis of surface fault displacements in 2014 Nagano-ken-hokubu earthquake by high performance computing

OCEAN HALL

9:40-12:00 S7: Dynamic Loading and Excavation

Chair: T. Okada **Co-Chair:** N. Iwata

- (0005) T. Saksala: Numerical modelling of dynamic indentation of rock with polygonal finite elements
- (0024) T. Yokoyama: Rock stresses around active faults measured by using the high stiffness hydraulic fracturing technique
- (0050) H. Nakamura: Model tests and numerical simulations on evaluation method of earthquake induced failure of rock slopes
- (0015) T. Sasaki: Seismic response analysis of a tailing dam foundation composed of discontinuous rock masses and countermeasure design
- (0066) M. Ishimaru: Numerical simulations on the seismic stability of rock foundations under critical facilities via dynamic nonlinear analysis
- (0063) T. Sato: The dynamic response of Horonobe Underground Research Center during the 2018 June 20 earthquake
- (0008) W. Yao: Dynamic fracture properties of rocks subjected to static pre-load and hydrostatic confining pressure
- (0051) H. Shariati: Inelastic mechanical behavior of granite under spherical indentation loading condition with emphasis on a criteria for damage description

13:00-15:20 S9: Strong Motion Simulation-2 /Case Histories

Chair: M. Miyajima **Co-Chair:** T. Ikeda

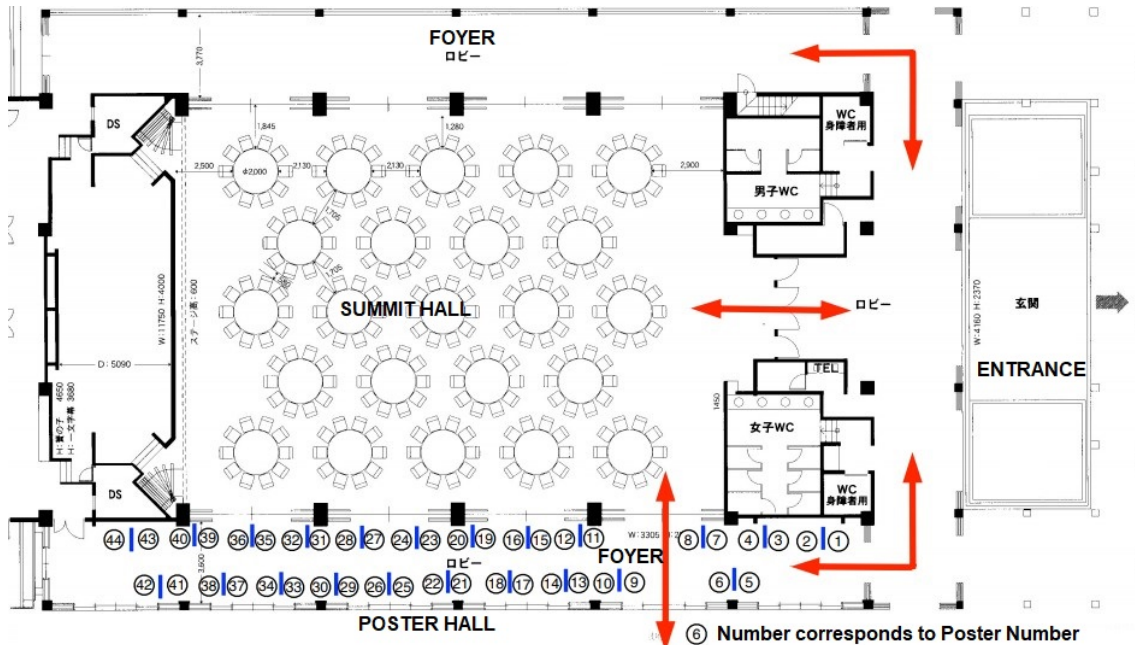
- (0076) Y. Ono: Ground motion observation in Padang, West Sumatra, Indonesia
- (0110) N.Z. Nasiry: Ground motion estimation at Kabul City for Mw 7.5 Hindu Kush earthquake
- (0069) T. Sugimoto: Application of core-based stress measuring method in the vicinity of earthquake source fault: Diametrical Core Deformation Analysis
- (0035) Y. Kamada: Overview of seismic activity and historical earthquake disasters in Okinawa
- (0120) I. Sakamoto: Geological and geomorphological features in broken gravels from the North Senoumi-bank, Suruga-bay, Japan and its implications on Mega-earthquakes
- (0122) T. Hashimoto: Analysis of the stone wall damage of Kumamoto Castle by 2016

Kumamoto earthquake using 3D laser scanner and ground survey

(0042): N. Cai: Safe and Rapid Drift Development in Burst-prone Mines through Innovative Rock Support

POSTER SESSION

Summit Hall Foyer: Poster Session will be held between 15:00-16:30 on May 9. However, posters will be displayed from 13:00 on May 8 till 12:00 on May 10. The authors are kindly suggested to be present at their posters during break times



THE LIST OF POSTERS

- P1 (T1)(0023) S. Kodate: Mechanical behaviour and characteristics of rocks subjected to shock loads
- P2(T1) (0016) C. Qiao: Fatigue Life Characteristics of Limestone in Karst Tunnel
- P3(T1) (0019) N. Kamoshida: Dynamic-deformation characteristics of granite under uniaxial compressive stress
- P4(T1) (0048) T. Okada: Dynamic shear strength of an artificial rock joint under cyclic and seismic wave loading
- P5(T1) (0059) I. Sakamoto: Shock test on rounded rock fragments in Suruga Bay sediments and its implications on past mega-earthquakes
- P6(T1) (007) K. Xia: Determination of dynamic mode II fracture toughness of rocks using a dynamic punch-through shear method
- P7(T1) (0097) Y. Yamashiro: The effect of characteristics of back-filling material on the seismic response and stability of castle retaining-walls

- P8(T1) (0104) K. Shimohira: An experimental study on the formation mechanism of tsunami boulders
- P9(T1)(0093) Ö. Aydan: Some considerations on the static and dynamic shear testing on rock discontinuities
- P10(T1) (0084) M. Mohammadnejad: Numerical simulation of the rock cutting
- P11(T1) (0109) W. Lin: A trial to reveal stress recovery at Nojima fault after the 1995 Kobe earthquake by core-based measurement methods
- P12(T1) (0017) M. Yagi: Tectonics and crustal stresses in Yatsushiro Sea and its relation to the causative faults of the 2016 Kumamoto earthquakes
- P13(T2) (0044) M. Yamada: Prediction of Near Fault Ground Motion by Dynamic Rupture Simulation
- P14(T2) (0101) T. Ikeda: Source modeling of the mid-scale crustal earthquake by forward modeling using the empirical Green's function method
- P15(T3-1) (0064) A. Sekiguchi: Centrifugal model tests on the seismic stability of rock foundations under critical facilities
- P16(T3-2) (0074) H. Inoue: An integrated study on the risk assessment of Abuchiragama karstic underground shelter (Okinawa, Japan) under static and dynamic conditions
- P17(T3-2) (0100) H. Minei: An integrated study on the large-scale arch structure for protection of karstic caves at New Ishigaki Airport
- P18(T3-2) (0020) Y. Kikuchi: Seismic stability evaluation of the existing rock slope subject to ground motion records of 2011 Tohoku earthquake
- P19(T3-4) (0038) C. Atalar: Failure mechanism and causes of Ergenekon landslide (Turkish Republic of Northern Cyprus - TRNC)
- P20(T3-4) (0075) K. Horiuchi: An Experimental Study on the Dynamics Stability of Overhanging Cliffs
- P21(T3-4) (0058) S.B. Çelik: Dynamic model tests on the Babadağ-Gündoğdu Landslide (Denizli-Turkey)
- P22(T9) (0119) N. Okabe: The utilization of drones and laser scanning technology in rock engineering
- P23(T3-4) (0077) H. Kobayakawa: Seismic stability evaluation verification of slopes reinforced
- P24(T3-4)(0090) S. Komata: Characteristics and Mechanisms of Earthquake-induced Landslides according to recent Events and Studies
- P25(T6) (0009) K. Takamura: Consideration on setting of detonation time interval of control blast
- P26(T6) (0043) J.W. Cho: Estimation of impulsive forces of hydraulic breaker via transfer path analysis (TPA) method

- P27(T8) (0032) K. Kubota: Evaluation of the excavation disturbed zone of sedimentary rock in the Horonobe Underground Research Laboratory
- P28(T8) (0055) K. Okazaki: An attempt to estimation of continuous in-situ elastic modulus ahead of tunnel face in volcanic and pyroclastic rock area
- P29(T8) (0057) H. Takehata: Evaluation of strength of rock mass with fractures and deformation structures using homogenization theory at Tokuyama underground power house
- P30(T8) (0092) H. Inoue: Assessment of rock mass conditions of Ryukyu Limestone formation for a rock-cut in Urasoe Fault Zone (Okinawa) by elastic wave velocity tomography
- P31(T9) (0003) A. Indelicato: Nature and Distribution of Cavities within the Ma On Shan Marble at Area 90 - Hong Kong
- P32(T3-1) (0103): Y. Araki: A fundamental study on the foundations in Ryukyu Limestone Formation and the shear properties of interfaces and discontinuities under static and dynamic loading conditions
- P33(T3-2) (0030) M. Imazu: The dynamic and multi-parameter responses of the Taru-toge tunnel during excavation
- P34(T3-2) (0094) T. Tomori: An integrated study on the response of unsupported underground cavity to the nearby construction of piles of Gushikawa By-Pass Bridge
- P35(T3-2) 80095) Ö. Aydan: A study on the dynamic and multi-parameter responses of Yanbaru Underground Powerhouse
- P36(T3-2) (0099) K. Sugiura: An integrated system for the cavity-filling of an abandoned lignite mine beneath Kyowa Secondary School in Mitake, Japan against an anticipated mega-earthquake
- P37(T3-2) (0052): T. Ito: The effect of cave-filling of abandoned lignite mines in Tokai Region, Japan against an anticipated mega-earthquake
- P38(T3-5) (0105) K. Takara: A dynamic model study on the dynamic response and stability of Perry Banner Rock in Nakagusuku, Okinawa, Japan
- P39(T3-5) (0067) N. Tokashiki: Some example of damage to rock masonry structures caused by recent earthquakes
- P40(T6) (0027) Q. Zhang: Numerical simulation of vibration in an excavated tunnel caused by blasts in adjacent tunnel
- P41(T3-4) (0108) Ö. Aydan: The dynamic response and stability of discontinuous rock slopes
- P42 (T6) (0026) U. Ateş: Investigation of vibration patterns occurred during TBM excavation and rock cutting tests
- P43(T4) (0013) M. Vahab: An X-FEM investigation of deflection/penetration of hydro-fractures

at material discontinuities

P44(T8) (0115) L. Nazarova: Method to determine coal-rock joint conditions by tomography
data: theory and lab test