1st International FLAC/DEM Symposium
Final Program

MONDAY, AUGUST 25

Symposium Check-in (Winter Garden) ..... *8:00 – 9:00*

MORNING SESSION
Great Hall

Welcome & Opening Address – Roger Hart ..... ***9:00 – 9:15***

Keynote Speaker – Loren Lorig*, "Using Numbers from Geology"* ..... ***9:15 – 10:00***

Coffee break ..... ***10:00 – 10:15***

Session 1-1 – Slope Stability ..... **10:15 – 12:00**
Session Chair: Patricio Gomez

Landslide stabilization using drilled shafts – D. Pradel & R. Carrillo

A study of cliffs subject to degradation by DEM (PFC2D) – S. Utili & R. Nova

On modeling of slope stability using UDEC – M. Tabbara & G. Karam

Modifications of PFC3D for rock mass fall modeling – R. Poisel & A. Preh

Lunch (Winter Garden) ..... ***12:00 – 1:30***

AFTERNOON SESSIONS

Hiawatha Room #1

Session 1-2 – Slope Stability ..... **1:30 – 2:20**
Session Chair: Alison Ord

Influence of rock-strength spatial variability on slope stability – M. Jefferies, L. Lorig & C. Alvarez

Application of distinct element code, PFC3D, for simulating effects of tunnel failure on slope surface – S. Kuraoka & T. Makino

Session 2 – Numerical Techniques ..... **2:20 – 3:15**
Session Chair: Alison Ord

Automatic grid generation, property rezoning & geomechanical analysis of Petrel-ECLIPSE petroleum reservoir data with FLAC3D – J. Adachi, T. Hartman, L. Lomas, R. Plumb, I. Gil, M. Sanchez & R. Taghavi

Automatic remeshing logic in large strain continuum simulations – Y. Han, P.A. Cundall & R. Hart

Coffee break ..... ***3:15 – 3:30***

Session 3 –Coupled Processes\Codes ..... **3:30 – 5:15**
Session Chair: Ian Clark

Determination of aquifer and aquitard properties by inverse hydromechanical modeling – M.J. Burlingame

Thermo-hydromechanical analysis of a dam using FLAC3D software – C. Bourdeau, D. Billaux & A.F. Chraibi

Stability of a slope in unsaturated conditions – C. Detournay & R. Hart

Hiawatha Room #3

Session 4 – Fracture Propagation ..... **1:30 – 2:20**
Session Chair: Peter Hudleston

Effects of stress and induced cracking on the static and dynamic moduli of rock – D.O. Potyondy & J.F. Hazzard

Modeling of unrelieved rock cutting test by using PFC3D -- O. Su & N.A. Akcin

Session 5-1 – Tectonics ..... **2:20 – 3:15**
Session Chair: Peter Hudleston

Numerical experiments to investigate faulting and the dynamics of tectonic processes – T.R. Harper

Using PFC2D to investigate volcanic debris avalanche emplacement processes and deposit features with special consideration to Mexican volcanic collapse deposits – N. Thompson

Coffee break ..... ***3:15 – 3:30***

Session 5-2 – Tectonics ..... **3:30 – 5:15**
Session Chair: Peter Hudleston

Numerical modeling of stress-strain state of the earth's crust of the Caspian region – I.A. Garagash & A.V. Dubovskaya

Stress distribution in the footwall of an active normal fault – T.R. Harper & T.N. Pritchard

Particle modeling of brecciation – A. Ord, B.E. Hobbs, S. Mikula & H. Sheldon

Ice Breaker Party (Winter Garden) ..... ***6:30 – 9:30***

TUESDAY, AUGUST 26

MORNING SESSION
Great Hall

Keynote Speaker – Alan Guest, "*PFC, a Dream Coming True*" ***.....8:30 – 9:00***

Session 6-1 – Material Behavior .....9:00 – 10:00
Session Chair: Charles Fairhurst

Anisotropy and scale dependency in jointed rock-mass strength – A Synthetic Rock Mass Study – D. Mas Ivars, M. Pierce, D. DeGagné & C. Darcel

Simulation of rock-mass strength anisotropy and scale effects using a Ubiquitous Joint Rock Mass (URJM) model – B. Sainsbury, M. Pierce & D. Mas Ivars

Determination of specific rockmass failure envelope via PFC and its subsequent application using FLAC – D. Saiang

Coffee break.....10:00 – 10:15

Session 6-2 – Material Behavior .....10:15 – 12:00
Session Chair: Charles Fairhurst

Special presentation by Martin Schöpfer – The impact of porosity and crack density on the elasticity, strength and friction of bonded particle models for rock -- M.P.J. Schöpfer, S. Abe, C. Childs & J.J. Walsh

Investigation of core stress memory using discrete particle modeling – S. Gorodkov, R.M. Holt & L. Li

Numerical prediction of a centrifuge model – implications to rock engineering using FLAC – M. Tsesarsky & M.L. Talesnick

The Cysoil model: a simple strain hardening constitutive model for soft and stiff soils – C. Detournay & P. Cundall

Implementation and three dimensional example applications of a bounding surface hypo-plasticity model for sand as a C++ UDM for FLAC^{3D} – F.G. Ma & Z.L. Wang

Lunch (Winter Garden)***.....12:00 – 1:30***

AFTERNOON SESSIONS

Hiawatha Room #1

Session 7-1 – Mining..... 1:30 – 3:15
Session Chair: Richard Brummer

Initialization of non-uniform stress for complex geology and topographic conditions – J.R. Killian, P.F. Cicchini & S.C. Schmelter

Stresses under coal stockpiles during drawdown – I.H. Clark

Ore pass stability analysis at the Brunswick Mine using PFC^{3D} – K. Esmaieli, J. Hadjigeorgiou, M. Grenon & R. Harrisson

Calibration of large-scale three-dimensional non-linear numerical models of underground mines using microseismic data – P.P. Andrieux, M.R. Hudyma, C.P. O'Connor, H. Li, L. Cotesta & R.K. Brummer

Coffee break..... 3:15 – 3:30

Session 7-2 – Mining..... 3:30 –4:30
Session Chair: Richard Brummer

Application of global-local modeling to mining rock mechanics problems – J. Sjöberg & L. Malmgren

3DEC numerical modeling of the Tindaya Mountain Project – M. Senís & P. Varona

Numerical analysis of strata behavior in the vicinity of a longwall panel in a coal seam mined with roof caving – M. Kwaśniewski

Hiawatha Room #3

Session 8-1 – Fabric ..... 1:30 – 3:15
Session Chair: Martin Schöpfer

Relating PFC parameters to rock properties for application to reservoir scale geomechanics – H.T. Alassi & R.M. Holt

A grain scale PFC^{3D} model – L. Li, I. Larsen & R.M. Holt

Investigation of the air void effect on asphalt mixture using 2D and 3D DEM – S. Adhikari, Z. You, Q. Dai & Y. Liu

3D microstructural modeling – M. Herbst, H. Konietzky & K. Walter

A new method of microparameter determination for PFC^{2D} synthetic rock model generation – J. Yoon, S. Jeon, O. Stephansson, A. Zang & G. Dresen

Coffee break ..... 3:15 – 3:30

Session 8-2 – Fabric ..... 3:30 – 4:30
Session Chair: Martin Schöpfer

Role of interfacial strength properties in determining bulk mechanical properties in block-in-matrix rocks – S.-H. Yoo & Y. Park

Modeling granular particle shape using discrete element method – N. Das, B. Sukumaran & A.K. Ashmawy

Evolution of shape fabrics in deforming rigid-object bearing systems: a distinct element method approach – Y. Park, K.-S. Kim, C. Lee & Y. Park

Special Event & Banquet – *Charles Fairhurst (speaker)* ***.....6:00 – 12:00***

Tour, Reception & Dinner **at Mill City Museum** (http://www.millcitymuseum.org/).

Located just a few blocks from The Depot hotel, the museum chronicles the flour milling industry that dominated world flour production for roughly a half-century and fueled the growth of Minneapolis, recognized across the nation and around the world as "Mill City." Built within the ruins of a National Historic Landmark, the Washburn A Mill, the museum will provide a multi-sensory, interactive journey. The story of flour milling - and its impact on Minneapolis, the nation and the world - comes to life in this one-of-a-kind museum.

WEDNESDAY, AUGUST 27

MORNING SESSION
Great Hall

***Keynote Speaker – Peter Byrne**, "State of the Art Dynamic Liquefaction Analysis Procedures" .....8:30 – 9:00*

Session 9-1 – Underground Construction .....9:00 – 10:00
Session Chair: Huanchun Zhu

Engineering evaluation of design concepts for a large span urban underground station cavern in weak rock based on design analysis – J.C. Sharp, S.C. Bandis, C.A. Schinas, R.N. MacKean & S.P. Watson

Numerical analysis of tunnel Cenkova using FLAC^{3D} – J. Likar & J. Čadež

Analysis of live loads on culverts using FLAC^{3D} – D.L. Petersen, G. Li & C.R. Nelson

***Coffee break*.....10:00 – 10:15**

Session 9-2 – Underground Construction .....10:15 – 12:00
Session Chair: Huanchun Zhu

The application of FLAC^{3D} on Picote II Underground Powerhouse – C. Esteves, N. Plasencia & C. Lima

Numerical modeling of a subway construction accident: case history and analysis – B. Liu, T. Li & Y. Han

Simulation of the excavation of a tunnel using an EPB machine – M. Senís, P. Varona & P. Velasco

Protection measures of monumental buildings during the excavation of a tunnel with an EPB machine – M. Senís, P. Varona & P. Velasco

Research on simulation of rupture of rock mass around tunnels based on PFC – T. Wang, Q. Sheng, Y.H. Zhang & W. Qin

Lunch (Winter Garden)*.....12:00 – 1:30*

AFTERNOON SESSIONS

Hiawatha Room #1

Session 10 – Dynamics ..... 1:30 – 3:30
Session Chair: Wolfgang Roth

Analysis of a seismically induced highway embankment failure during the 2007 Noto earthquake – P. Kitiyodom, A. Murata, Y. Sasa, E. Shimamoto, T. Matsumoto & M. Kitaura

Validity of the pseudostatic surface assumption for evaluating seismically-induced deformation in slopes – P.M. Strenk & J. Wartman

Seismic earth pressures on below-grade U-shape walls – E. Zhai & B. O'Neill

Modeling and monitoring of hammer piling induced vibrations – B. Ni, K. Carr, M. Thomas & P.J. Millar

Wave propagation in cross-anisotropic soils with dynamic FLAC – G. Inci & K. Rao

Modeling shock and detonation waves with FLAC – P.A. Cundall & C. Detournay

Hiawatha Room #3

Session 11 – Retaining Wall ..... 1:30 – 2:40
Session Chair: Gilles Buchet

Bulkhead wall design on very soft clay ground – C. Dai

Installation of a triple anchored excavation wall in sand using the Cysoil model – C. Detournay & Y. Han

A FLAC model for classical earth pressure problems – J.S. Shiau, C.J. Thomas & C.A. Smith

Session 12 – Foundation..... 2:40 – 3:30
Session Chair: Gilles Buchet

Differential settlements with FLAC^{3D} – G. Inci & J. Glastonbury

Foundation located near slope ~ A FLAC study – J.S. Shiau, J.F. Watson & C.A. Smith

Symposium Closure (Hiawatha Room #1) *.....3:30 – 3:45*