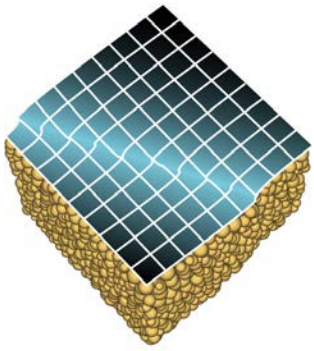

3rd International Symposium on

Computational Geomechanics

21 August – 23 August 2013, Krakow, Poland

Final Symposium Program

August 2013

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Prof. S. Pietruszczak (Co-Chair)

Department of Civil Engineering, McMaster University, Hamilton, Ontario, Canada

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Tuesday: August 20, 2013 **Registration: Hotel Radisson Blu 16:00 – 19:00**
Wednesday: August 21, 2013 **Registration: Hotel Radisson Blu 8:00 onwards**

8:50-9:00 Welcome (*Carmen*)

Feature Lectures

9:00-10:45 *Chair*: *E. Alonso*

A.P.S. Selvadurai
THM processes in a fractured formation

R.L. Michalowski
Principal causes of aging and rate effects in sands: static fatigue and pressure dissolution

R. I. Borja
Persistent shear band in variably saturated porous materials

10:45-11:15 Coffee break	**10:45-11:15 Coffee break**
A1 - Constitutive relations for geomaterials (*Carmen*) **11:15 – 12:30 *Chair*:** *A. Gens* XFEM-based geomechanical modelling of porous media at small scale *B. Sonon, B. François & T.J. Massart* A water retention model for compacted clayey soils *A.C. Dieudonné, S. Levasseur, R. Charlier, G. Della Vecchia & C. Jommi* Coupling between mechanical and water retention behaviour in unsaturated soils *M. Lloret-Cabot & D. Sheng*	**B1 – Applications: foundations (*Halka*)** **11:15 – 12:30 *Chair*:** *J. Carter* Numerical analysis of the long term settlement of energy piles *A. Di Donna, F. Dupray & L. Laloui* Implementation of a 6-dof hypoplastic macroelement in a finite element code *C. Tamagnini, D. Salciarini & R. Ragni* Assessing the liquefaction risk reduction of reinforced soils: a homogenization approach *M. Gueguin, G. Hassen & P. de Buhan*
12:30-14:00 Lunch	**12:30-14:00 Lunch**

A2 - Constitutive relations for geomaterials	**B2 – Applications: slopes/dams**
14:00-15:30 *Chair:* *H. Schweiger*	**14:00-15:30 *Chair:*** *W. Pula*
Modeling of progressive failure in geotechnical structures subjected to water infiltration *S. Pietruszczak & E. Haghighat*	Probabilistic analysis of a benchmark problem for slope stability in 3D *Y. Li, M.A. Hicks & J.D. Nuttall*
On modeling cross-anisotropic elasticity of soils with a microstructure tensor *B. Schädlich & H.F. Schweiger*	A probabilistic study of a fill in gently inclined area of sensitive clay using FEA *P. Fornes & H.P. Jostad*
Significance of t_{ij} concept in constitutive modeling of geomaterials *T. Nakai, H.M. Shahin, M. Hinokio & H. Kyokawa*	Modelling solid-fluid transition in soils during mudflows *N. Prime, F. Darve & F. Dufour*
Numerical modeling of strain localization and interface damage in cement based materials *C.F. Jin, Q.Z. Zhu, S. Pietruszczak & J.F. Shao*	Modeling transient groundwater flow and piping under dikes and dams *J.M. van Esch, J.A.M. Teunissen & D. Stolle*
15:30-16:00 Coffee break	**15:30-16:00 Coffee break**
A3 – Thermo-Hydro-Mechanical problems	**B3 – Applications: foundations**
16:00-17:30 *Chair:* *T. Hueckel*	**16:00-17:30 *Chair:*** *C. Gioda*
Hydrostatics and relative motion of pore fluid *R.R. de Jager, F.A.J.M. Mathijssen & F. Molenkamp*	Load bearing behavior of bucket foundations in sand *M. Achmus, K. Thieken, C.T. Akdag, C. Schröder & C. Spohn*
High pressure gas transport under coupled thermal, hydraulic, chemical and mechanical behaviour *L.J. Hosking, M. Sedighi & H.R. Thomas*	Stone columns foundation analysis with concentric ring approach *S.A. Tan & K.S. Ng*
A hydromechanical solution for CO_2 injection process in deep aquifers *C. Li, P. Bares & L. Laloui*	Investigation of different solution strategies for non-linear 3D consolidation problems *H.P. Jostad & H.K. Engin*
Two-phase numerical model for soil–fluid interaction problems *Z. Wieckowski*	Numerical analysis of torpedo anchors *H. Sabetamal, M. Nazem & J.P. Carter*

19:30 Reception (Manggha Museum of Japanese Art; ul. Marii Konopnickiej 26, Krakow)

Thursday 22 August 2013

Feature Lectures
(*Carmen*)

9:00-10:45 ***Chair****: A. Gens*

P.V. Lade
Shear banding in cross-anisotropic sand deposits loaded through flexible and stiff boundaries

T. Hueckel
Soil suction and cracking from the onset to the end of desaturation: micro-scale evidence and model

L. Andresen
Research and development needs in computational geomechanics – practitioners perspective

10:45-11:15 Coffee break	**10:45-11:15 Coffee break**
A4 - Localized deformation/fabric anisotropy (*Carmen*) **11:15 – 12:30** ***Chair****: P.V. Lade* Discrete analysis of micro-structural events in granular shear zones *M. Nitka, J. Tejchman & J. Kozicki* On the description of fracture propagation in brittle materials *E. Haghighat & S. Pietruszczak* Modelling granular materials through coordination number and fabric anisotropy at the particle scale *M. Pouragha & R. Wan*	**B4 – Applications: transient problems (*Halka*)** **11:15 – 12:30** ***Chair****: A. Truty* A quantitative comparison of the effects of design parameters of landfill liners on inorganic contamination of groundwater *A.H. El-Zein & I. McCarroll* Numerical modeling of gas fracturing with the Extended Finite Element method *M.Goodarzi, E.F. Salmi, S. Mohammadi & A. Jafari* A study on the coupled thermo-mechanical behavior of rock mass using Boundary Element method *M.K. Song*
12:30-14:00 Lunch	**12:30-14:00 Lunch**

A5 - Numerical algorithms **14:00-15:30 *Chair:*** *R. Borja* Dynamic linearization of nonlinear yield envelopes for limit analysis applications *A.V. Lyamin, K. Krabbenhøft & J. Huang* Domain reduction method in single and two-phase dynamic soil-structure interaction problems *A.A. Truty & Th. Zimmermann* On the application of high-order elements in large deformation problems of geomechanics *M. Nazem, M. Kardani, J.P. Carter & S.W. Sloan* Implementation of a quasi-static Material Point Method for geotechnical applications *B. Wang, P.J. Vardon & M.A. Hicks*	**B5 – Transient problems: HM coupling/ dynamics** **14:00-15:30 *Chair:*** *F. Molenkamp* A double-scale modelling approach for hydro-mechanical coupling *A.P. van den Eijnden, F. Collin, P. Bésuelle & R. Chambon* A comparison of the local discontinuous and continuous Galerkin methods in simulating unsaturated flow *A. Ghavam-Nasiri & A.H. El-Zein* Decomposition of measured ground vibrations into basic soil waves *D. Macijauskas & S. Van Baars* On the dynamic analysis of two-phase soils *A. Cividini & G. Gioda*
15:30-16:00 Coffee break	**15:30-16:00 Coffee break**
A6 – Constitutive relations for geomaterials **16:00-17:30 *Chair:*** *R. Wan* Microcracks-induced damage modelling for transversely isotropic rocks *S. Levasseur, H. Welemane & D. Kondo* Unified description of Toyoura sand under different loading and drainage conditions *F. Zhang, B. Ye & G.L. Ye* Description of tortuosity and hydraulic conductivity of anisotropic porous materials *P. Guo* Computation of strain dependent permeability of porous media using an enhanced pipe network model *H.S. Shin, K.Y. Kim & G.N. Pande*	**B6 – Applications: foundations/other** **16:00-17:30 *Chair:*** *J. Tejchman* Small strain effects on the stiffness of monopile foundations in sand *K. Thieken & M. Achmus* Numerical analysis of a penetrometer free-falling into a non-uniform soil layer *M. Moavenian, M. Nazem & J.P. Carter* Modelling of sand column collapse with Material Point Method *W.T. Solowski & S.W. Sloan* Comparison of the computed and observed behavior of an anchored wall under limited geotechnical characterization *H. Karatag, S. O. Akbas & A. C. Gel*

18:00 Meeting – Technical Advisory Committee of the International Centre for Computational Engineering (Radisson Blu)

Friday 23 August 2013

Feature Lectures
(*Carmen*)

9:00-10:45 ***Chair****: P. de Buhan*

L. Laloui
Hydromechanical analysis of a volcanic ash slope subjected to wetting and drying cycles

L. Gambarotta
Acoustic velocity in layered rock masses with periodic fractures

R.B.J. Brinkgreve
Validating geotechnical finite element models

10:45-11:15 Coffee break	**10:45-11:15 Coffee break**
A7 - Constitutive relations for geomaterials (*Carmen*) **11:15 – 12:30** ***Chair****: A.P.S. Selvadurai* Modelling swelling behavior of anhydritic clayey rocks *A. Ramon & E.E. Alonso* The effect of radial walls on CPT in a DEM-based virtual calibration chamber *M. Arroyo, J. Butlanska, A. Gens & C.O. Sullivan* An adaptive RVM approach for assessment of elastic compressibility of sandstone *Z.B. Liu & J.F Shao* Modelling of shear modulus of unsaturated fine grained soils at very small strain *K. S. Wong & D. Masin*	**B7 – Applications: underground structures/other (*Halka*)** **11:15 – 12:30** ***Chair****: M. Achmus* Analytical and numerical studies on the mechanism of mining subsidence *E. Fathi Salmi, M. Nazem & A. Giacomini* Numerical modeling of fracture patterns around deep underground drifts *D. Seyedi & G. Armand* A practical approach to constitutive models in the analysis of geotechnical problems *K.N.Vakili, T. Barciaga, A. A. Lavasan & T. Schanz* Modeling the two-dimensional failure of dry-stone retaining wall *J. Oetomo, E. Vincens, F. Dedecker & J.C. Morel*
12:30-14:00 Lunch	**12:30-14:00 Lunch**

A8 - Constitutive relations: performance/other aspects **14:00-15:30 *Chair:*** *L. Laloui* Geomechanical behaviour of rock salt: assessment of existing models *K. Khaledi, M. Datcheva & T. Schanz* Equivalent Mohr-Coulomb strength parameters accounting for the influence of intermediate principal stress *Y.-K. Lee & S. Jeon* The incorporation of new isotropic and kinematic hardening rules in an anisotropic constitutive model *P. Sitarenios, G. Belokas & M. Kavvadas* Ground penetrating radar system for detection of desiccation cracks in soils *P.C. Prat, A. Ledesma, A. Cuadrado & H. Levatti*	**B8 – Applications: foundations** **14:00-15:30 *Chair:*** *C. Tamagnini* Evaluation of bearing capacity of shallow strip foundation using the random finite element method *J. M. Pieczynska & W. Pula* An optimization method for approximating the macroscopic strength criterion of stone column reinforced soils *M. Gueguin, G. Hassen, J. Bleyer & P. de Buhan* A simplified computational model for a periodic system of horizontally loaded piles *A. Urbański* Large deformation finite element analysis of spudcan penetration in layered soil *H.D.V. Khoa*
15:30-16:00 Coffee break	**15:30-16:00 Coffee break**
Feature Lectures **(*Carmen*)** **16:00 – 17:15 *Chair****:*** *A. Lyamin* ***M. Hicks*** Applications of Random Finite Element Method ***G.N. Pande*** On modeling of partially saturated soils	

19:30 Symposium Dinner (Restaurant Wentzl, Old Town, Krakow)