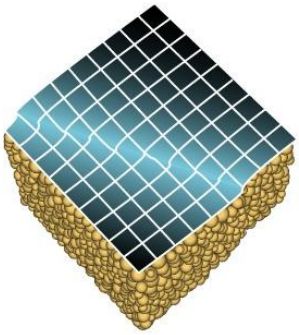

ComGeo IV

International Symposium on

Computational Geomechanics

2-4 May 2018, Assisi, Italy

(The venue: Palazzo Bernabei, Via San Francesco 18)

Symposium Program

April, 2018

Organizing Committee

Prof. G. N. Pande (Co-Chair)

Swansea University, Swansea, UK
IC2E, Rhodes, Greece

Prof. S. Pietruszczak (Co-Chair)

McMaster University, Hamilton, Ontario, Canada
Cracow University of Technology, Poland

Prof. C. Tamagnini (Co-Chair)

University of Perugia, Italy

Co-organizers

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University of Perugia, Italy

Prof. W. Pula
Wroclaw University of Science & Technology, Poland

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C. di Prisco	***(Italy)***	***H. Schweiger***	***(Austria)***
I. Einav	***(Australia)***	***A.P.S. Selvadurai***	***(Canada)***
L. Gambarotta	***(Italy)***	***J.F. Shao***	***(France)***
A. Gens	***(Spain)***	***H-S. Shin***	***(South Korea)***
M. Hicks	***(Netherlands)***	***P. Simonini***	***(Italy)***
T. Hueckel	***(USA)***	***J. Tejchman***	***(Poland)***
C. Jommi	***(Italy)***	***H. Thomas***	***(U.K.)***
M. Karstunen	***(Sweden)***	***A. Truty***	***(Poland)***
L. Laloui	***(Switzerland)***	***C. Viggiani***	***(France)***
D. Lydzba	***(Poland)***	***R. Wan***	***(Canada)***
D. Masin	***(Czech Republic)***		

Tuesday: May 1, 2018 **Registration:** Piccolo Teatro degli Instabili, Via Metastasio, 18, **16:00-19:00**

Wednesday: May 2, 2018 **Registration:** Palazzo Bernabei, **8:00 onwards**

8:45-9:00 Welcome address: *F. Moriconi, Rector of University of Perugia* (Aula Magna)

Feature Lectures

9:00-10:20 ***Chair**: R.L. Michalowski*

A.P.S. Selvadurai
'Thermo-poromechanics of a fluid inclusion'

***J. E. Andrade**, R. Kawamoto, G. Viggiani & E. Andó*
'The level set discrete element method and its applicability to shear banding'

10:20-10:50 Coffee break

A1 - THM coupling
(Room #1)

10:50 – 12:30 ***Chair**: L. Laloui*

T.S. Nguyen, B. Graupner, Y. Gugliemi & J. Rutqvist
'Mathematical modelling of a fault slip induced by water injection'

C. Jommi & E. Stopelli
'Comparing FE and NURBS approximations for infiltration problems in unsaturated soils'

A. Ramon & E.E. Alonso
'Modelling tunnel response in highly expansive sulphated rock'

F. Ronchi, D. Salciarini & C. Tamagnini
'Coupled THM modeling of energy micro–pile behavior'

E.E. Dagher, T.S. Nguyen & J.A. Infante Sedano
'A mathematical model for two-phase flow (gas and water) in a swelling geomaterial'

B1 – Applications: Offshore structures
(Room #2)

10:50 – 12:30 ***Chair**: P. Simonini*

R. T. Klinkvort, G. Sauvin & L. Andresen
'Suction caisson installation design from CPT, utilizing machine learning techniques'

B. Bienen, F. Pisanò, D. Moretti, D. Salciarini & C. Tamagnini
'Macro-element modelling of suction buckets for the integrated analysis of jacket-supported offshore wind turbines'

S. Fan, B. Bienen & M. Randolph
'Effect of installation history on the lateral response of monopiles in dry sand'

H.D.V. Khoa, Y. Shin, H-J. Park, J-H. Kim, D-S. Kim, J. Han & S. Lee
'*Large deformation finite element analysis of spudcan penetration behaviour on uneven seabed'*

R. Ragni, B. Bienen, D. Masin, J. Jerman, D. Wang & M.J. Cassidy
'Implementation of a hypoplastic model with intergranular strain for the modelling of spudcan cyclic response in silty clay'

12:30-14:00 Lunch (Palazzo Vallemani)

Wednesday: May 2, 2018 - cont.

Feature Lectures (Aula Magna)

14:00-15:20 ***Chair**: J.E. Andrade*

***L. Laloui**, A. Minardi & A. Ferrari*
'Gas shales: geomechanical challenges and analysis'

***G. Meschke**, I. Khisamitov, S. Beckhuis & J. Reinold*
'Computational modeling of fluid induced fracture propagation in deep geothermal reservoirs'

15:20-15:50 Coffee break

A2 - Constitutive relations
(Room #1)

15:50 – 17:10 ***Chair**: D. Masin*

A. Bacigalupo & L. Gambarotta
'Micromorphic modelling of periodic blocky materials with elastic joints: overall constitutive tensors and inertial terms'

A.L. Petalas, Y.F. Dafalias & A.G. Papadimitriou
'SANISAND model simulation under rotation of principal stress axes for granular media'

P. Przecherski & S. Pietruszczak
'On specification of the conditions at failure in interbedded sedimentary rock mass'

K. Krabbenhoft, S. Torres & X. Zhang
'Anisotropic undrained shear strength model for clays'

B2 – Applications: Slope stability
(Room #2)

15:50 – 17:10 ***Chair**: M. Karstunen*

P. Sitarenios, F. Casini, A. Askarinejad & S.M. Springman
'2D hydro-mechanical analyses of rainfall induced slope instability'

D. Vescovi, D. Berzi & C. di Prisco
'Fluid-solid transition in unsteady shearing flows'

H. Hernvall, J. Dijkstra & M. Karstunen
'Comparison of limit state stability evaluation methods for geotechnical engineering'

B. Schneider-Muntau, F. Tschuchnigg, G. Medicus & W. Fellin
'Comparison of different strength reduction techniques on slope stability calculations'

19:00 Reception (Valle di Assisi Resort, Santa Maria degli Angeli)

Thursday: May 3, 2018

Feature Lectures (Aula Magna)

9:00-10:20 ***Chair****: W. Pula*

M.A. Hicks
'Influence of soil heterogeneity on embankment slope reliability in 3D'

D. Łydżba*, Adrian Różański & Damian Stefaniuk*
'Identification of the equivalent microstructure of porous materials: regularization and the stochastic optimization procedure'

10:20-10:50 Coffee break

A3 - Stochastic methods
(Room #1)

10:50 – 12:20 ***Chair****: M.A. Hicks*

M. Chwala M. & W. Pula
'Random bearing capacity of square footing based on kinematical approach'

G. Remmerswaal, M.A. Hicks & P.J. Vardon
'Ultimate limit state assessment of dyke reliability using the Random Material Point Method'

S. Drakos & G.N. Pande
'Quantification of uncertainty in Geotechnical Engineering based on polynomial chaos'

A.P. van den Eijnden & M.A. Hicks
'General uncertainty in the reliability analysis of heterogeneous soil slopes at small failure probability'

B3 – Applications: Transient/dynamic analysis
(Room #2)

10:50 – 12:20 ***Chair****: G. Viggiani*

B. Fryer, G. Siddiqi & L. Laloui
'Hazard and risk assessment of large seismic events owing to fluid injection'

A.F. Rotunno, F. Froiio & C. Callari
'A discrete numerical model of the front region in piping erosion'

E. Cattoni, D. Salciarini & C. Tamagnini
'A simplified, Newmark-like approach for the assessment of seismic performance of anchored diaphragm walls'

G. Buffi, P. Manciola, L. De Lorenzis, C. Tamagnini, A. Gambi & G. Montanari
'Assessment of seismic vulnerability of large concrete dams by means of finite element modelling'

12:30-14:00 Lunch (Palazzo Vallemani)

Thursday: May 3, 2018 ***- cont.***

Feature Lectures (Aula Magna)

14:00-15:20 ***Chair****: L. Gambarotta*

R.L. Michalowski*, Z. Wang, D. Park & S.S. Nadukuru*
'Stress corrosion cracking, maturing of contacts, and creep in silica sand'

R. Wan*, J. Duriez & F. Darve*
'The micromechanical nature of stresses in wet granular soils'

15:20-15:50 Coffee break

A4 - Constitutive relations
(Room #1)

15:50 – 17:10 ***Chair****: C. Jommi*

H. P. Jostad, N. Sivasithamparam, P. Carotenuto, C. Madshus, H. Sturm, L. Andresen & K. H. Andersen
'Cyclic behavior of water saturated dense sand'

Y-K. Lee & S. Pietruszczak
'Approximation of Mohr envelope for the generalized Hoek-Brown criterion'

D. Barreto
'Influence of grading on shear stiffness – the significance of accurate description of particle size distributions'

G.N. Pande, S. Pietruszczak & M. Wang
'Particle/pore-size distribution and micro-structure of saturation – key elements for rational description of mechanical behaviour of unsaturated soils'

B4 – Applications: Foundations
(Room #2)

15:50 – 17:10 ***Chair****: L. Andresen*

F. Tschuchnigg & H.F. Schweiger
'3D FEA of ultimate limit states: finite element limit analyses vs displacement based finite element analyses'

H.K. Engin, F. Nadim, P. Carotenuto & K. Bach
'Estimation of pile capacities using Case Base Reasoning method'

G. Vessia, A. Castrignano, D. Di Curzio & W. Puła
'3D spatial variability of mechanical properties of Emilia Romagna alluvial deposits and its implications in geotechnical design of foundations'

Y. Zhang, A. Zhou, M. Nazem & J.P. Carter
'Numerical implementation of a stress-saturation soil model with hydraulic hysteresis effects'

18:00 Tour of St Francis' Basilica

Friday: May 4, 2018

A5 - Instabilities/localization (Room #1)

9:00 – 10:40 ***Chair**: C. di Prisco*

E. Gerolymatou
'Borehole stability in brittle rock'

M. Krzaczek, J. Kozicki & J. Tejchman
'Modelling of hydraulic fracturing in rocks using coupled DEM/CFD approach'

E. Sakellariadi
'A strong discontinuity finite element model'

C. Plúa, C. Tamagnini & P. Bésuelle
'An isogeometric FE method for saturated and unsaturated soils with second gradient regularization'

M. Pouragha & R. Wan
'Micromechanical study of instability in granular materials using μ - GM constitutive model'

B5 – Applications: Material Point/Particle FE Method (Room #2)

9:00-10:40 ***Chair**: A. Truty*

L. Monforte, M. Arroyo, A. Gens & J.M. Carbonell
'Numerical study of penetration problems in fine grained soils with the Particle Finite Element Method'

L. Wobbes, J.R. Silva, V. Galavi, J.T. Eggenhuisen & C. Vuik
'Numerical simulation and verification of static liquefaction using the Material Point Method'

V. Girardi, F. Ceccato & P. Simonini
'Modelling saturated soil column collapse with 2-Phase 2-Point Material Point Method'

F. Fatemizadeh, D.F. Stolle & C. Moormann
'Simulation of free water-fully saturated soil interaction using the Material Point Method'

V. Galavi, M. Martinelli, F.S. Tehrani, A. Elkadi & D. Luger
'Simulation of vibratory driven piles with the axisymmetric Material Point Method'

10:40-11:10 Coffee break

A6 - Constitutive relations

11:10 – 12:30 ***Chair**: T.S. Nguyen*

S. Pietruszczak & S. Moallemi
'Modeling of localized damage in the presence of chemo-mechanical interaction'

T. Nakai & H.M. Shahin
'A single hardening elastoplastic model for describing stress path dependency of plastic flow'

P. Guo & J. Shi
'Existence of unique fabric state surface for granular media at critical state'

G. Medicus & B. Schneider-Muntau
'Stress-dilatancy in barodesy'

B6 – Other applications

11:10 – 12:30 ***Chair**: C. Tamagnini*

A. Truty & K. Podles
'Numerical model of flat dilatometer test in normally and overconsolidated cohesionless soils'

C. Fabris, B. Pulko & H.F. Schweiger
'Numerical modelling of anchor load tests: influence of the grout'

M. Kawa & W. Pula
'Reliability analysis of bearing capacity of square footing on spatially variable cohesive-frictional soil'

M. Suzuki, M. Kashiyama, T. Nakai & H.M. Shahin
'Numerical analyses and model tests on countermeasure against damage of existing structure due to tunneling'

12:30-14:00 Lunch (Palazzo Vallemani)

Friday: May 4, 2018 ***- cont.***

A7 - Micromechanical approaches
(Room #1)

14:00-15:40 ***Chair****: J. Tejchman*

K. Ehab Moustafa Kamel, B. Sonon, J-B. Colliat, P. Gerard & T.J. Massart
'Conformal discretization of hetereogeneous geomaterial RVEs generated by excursion sets of random fields'

S. Jiang, L. Shen, F. Guillard & I. Einav
'Experimental and numerical investigation of dynamic fracture evolution in glass-bead chains under impact'

Z. Karatza, O. Okubadejo, E. Ando, S.A. Papanicolopulos, G. Viggiani & J. Y. Ooi
'Contact topology during initial stages of particle breakage using x-ray tomography'

C. Bikong, Q.Z. Zhu & J.F. Shao
'Micromechanical modeling of time-dependent deformation and damage in claystone'

Z. Li, T.S. Nguyen, G. Su & Q. Zheng
'A dual porosity approach to model swelling of bentonite hydrated with brine'

B7 – Applications: Underground structures
(Room #2)

14:00 – 15:40 ***Chair****: H. Schweiger*

G. Beer & Ch. Duenser
'Isogeometric boundary element analysis of underground excavations considering effects of geology'

E.D. Coarita-Tintaya, M. Souley, M.N. Vu & F. Golfier
'Numerical anisotropic modelling of a deep drift at the Meuse/Haute-Marne URL'

C. di Prisco & L. Flessati
'A macroelement for coupled analysis of the mechanical response of deep tunnel fronts in cohesive soils'

N. Losacco, G.M.B. Viggiani & D. Branque
'Eulerian analysis of tunnel excavation with an EPB shield'

K-B. Lee, H-S. Shin, & D-G. Kim
'Development of a deep-learning based automatic tunnel incident detection system on CCTVs'

15:40-16:00 Coffee break

Feature Lecture (Aula Magna)

16:00-16:45 ***Chair****: A.P.S. Selvadurai*

G. Viggiani
'3D experimental micromechanics at the grain scale: what for?'

16:45-17:00 Closure: *G.N. Pande*

19:00 Conference Dinner (Castello di Petrata)