

11th IWBDG2017

International Workshop on Bifurcation and Degradation in Geomaterials
Limassol, Cyprus, 21-25 May 2017

PROGRAM

Sunday 21 May	17:30	Registration (Conference Site)
	19:00	Welcome Reception (By the pool)

Monday 22 May	08:00	Registration (Conference Site)
	08:30	Opening ceremony (Olympus Room) Welcome address by Prof. Euripides Papamichos (IWBDG Co-Chair, Aristotle University of Thessaloniki, Greece) Welcome address by Prof. Fusao Oka (Intl Steering Committee IWBDG, Kyoto University, Japan)
	Session 1. Experimental modeling of instabilities localization and degradation Chair: Joseph F Labuz (University of Minnesota, USA)	
	08:40	Keynote session 1. Localisation precursors in geomaterials <i>Jacques Desrues (CNRS-Grenoble, France)</i>
	09:20	Measuring force-chains in opaque granular matter under shear <i>Eloïse Marteau, José Andrade</i>
	09:40	Propagation and evolution of strain localization in clay <i>Dunja Peric, Xindong Wu</i>
	10:00	Emergence of strain localization in porous rocks characterized by full-field measurement in plane strain condition <i>Pierre Bésuelle, Patrizia Lanatà</i>
	10:20	Coffee Break
	10:40	Localization in plane strain compression of fluid-saturated rock <i>Roman Makhnenko, Joseph Labuz</i>
	11:00	3D particle-scale displacement gradient to uncover the onset of shear bands in sand <i>Andrew Druckrey, Khalid Alshibli</i>
	11:20	Load transmission by granular materials <i>Danuta Lesniewska</i>
	11:40	Periodic stick-slip deformation of granular material under quasi-static conditions <i>Danuta Lesniewska, Magdalena Pietrzak, Michal Nitka, Jacek Tejchman</i>
	Session 2. Constitutive modeling and multi-physical coupling for localization, instabilities and degradation of geomaterials Chairs: Jean Sulem (Ecole des Ponts ParisTech, France), Claudio di Prisco (Politecnico di Milano, Italy)	
	12:00	Cyclic elastoplastic constitutive model for soils based on non-linear kinematical hardening rule with volumetric and deviatoric kinematical parameters <i>Fusao Oka, Sayuri Kimoto, Hiroshi Matsuoka</i>

Monday 22 May	12:20	Theoretical prediction of strain localization in cross-anisotropic sands by non-coaxial elasto-plasticity <i>Maosong Huang, Xilin Lu, Jiangu Qian</i>
	12:40	Modeling sand behavior under partially drained stress paths <i>Ali Lashkari, M.S. Yaghtin</i>
	13:00	Lunch
	14:20	Keynote Session 2. Physico-chemical degradation of mechanical properties of geomaterials <i>Thomasz Hueckel (Duke University, USA)</i>
	15:00	<i>Prediction of sand instability under constant shear drained paths</i> <i>Ali Lashkari, M.J. Alipour</i>
	15:20	Model prediction of static liquefaction in unsaturated sands <i>Xilin Lu, Maosong Huang</i>
	15:40	Microscale analysis of the effect of suffusion on soil mechanical properties <i>Rodaina Aboul Hosn, Cong Doan Nguyen, Luc Sibille, Nadia Benahmed, Bruno Chareyre</i>
	16:00	Coffee Break
	16:20	A numerical model of internal erosion for multiphase geomaterials <i>Sayuri Kimoto, Benjamin Loret, Fusao Oka, Toshifumi Akaki</i>
	16:40	Chemically induced strain localization in geomaterials <i>Ioannis Stefanou, Jean Sulem</i>
	17:00	Unstable creeping in geomaterials <i>Claudio di Prisco, Federico Pisanò</i>
	17:20	The effect of rotational and isotropic hardening on the onset of compaction bands <i>Chara Prassa, Sotiris Alevizos, Manolis Veveakis, Yannis F Dafalias</i>
	17:40	Localization of deformation for shearing of a rock layer with Cosserat microstructure and different couplings <i>Hadrien Rattiez, Ioannis Stefanou, Manolis Veveakis, Thomas Poulet, Jean Sulem</i>
	18:00	End of session - Dinner on your own
	19:00	IWBDG Scientific and Advisory Board MEETING
20:30	IWBDG Scientific and Advisory Board DINNER	

Hans Muhlhaus Tribute	
Chairs: Arcady Dyskin, Elena Pasternak (University of Western Australia, Australia)	
08:30	Opening (Olympus Room) Welcome address by Profs. <u>Elena Pasternak</u> , <u>Arcady Dyskin</u> (Co-Chair, University of Western Australia)
08:45	Opening Keynote. Density discontinuities in gravity driven granular flows <i>Hans Muhlhaus (University of Queensland, Australia), Louis Moresi (University of Melbourne, Australia)</i>
09:25	Keynote HM1. Interplay between symmetry and anti-symmetry in the evolution of localized buckle patterns <i>Martin Paesold, Timothy Dodwell, <u>Giles Hunt</u> (Qintiq, Australia; University of Exeter, UK; University of Bath, UK)</i>
10:00	Keynote HM2. Coupled phenomena and instability in fault zones <i><u>Jean Sulem</u>, Ioannis Stefanou (Ecole des Ponts ParisTech, France)</i>
10:35	Coffee Break
11:00	Modelling of shear localization during granular flow within non-local hypoplasticity using Material Point Method <i>Jacek Tejchman, Pawel Hajko, Wojciech Solowski</i>
11:25	Strain localization with rate dependent models versus Cosserat continuum: an illustrative example <i>Ioannis Stefanou, Jean Sulem</i>
11:50	Physical and mathematical modeling of erosion processes across the scales <i>Alexander Scheuermann, H-B Muhlhaus, Sergio Galindo-Torres, Mohammad Aminpour, HMD Harshani, Tilman Bittner, Peter To, Maziar Gholami Korzani, Dorival Pedroso, Ling Li, Lutz Gross</i>
12:15	Customized coarse models for highly heterogeneous materials <i>Timothy Dodwell, Anhad Sandhu, Robert Scheichl</i>
12:40	Group Photo
13:00	Lunch

Tuesday 23 May

Tuesday 23 May	14:20	Keynote HM3. Modelling the Influence of loading paths on grain fragmentation using a micro-polar continuum description <i>Erich Bauer (Graz University of Technology, Austria)</i>
	14:55	Keynote HM4. Numerical simulations of debris flows and its application in hazard assessments <i>Kam Tim Chau (Hong Kong Polytechnic University)</i>
	15:30	Instability of geomaterials caused by transitional negative stiffness <i>Arcady Dyskin, Elena Pasternak</i>
	15:55	Localisation in surface process models — Computational challenges <i>Louis Moresi, Ben Mather, Romain Beucher</i>
	16:20	Coffee Break
	16:40	Fracking processes in saturated soil and rock <i>Wolfgang Ehlers</i>
	17:05	Opening of mode I fractures in geomaterials with rotating particles: small-scale Cosserat continuum approach and its verification <i>Arcady Dyskin, Elena Pasternak, Maxim Esin, Yuan Xu</i>
	17:30	DEM modelling of instability of particulate materials - Transitional negative stiffness <i>Yuan Xu, Elena Pasternak, Arcady Dyskin</i>
	17:50	The effect of constriction in hydraulic fracturing <i>Junxian He, Elena Pasternak, Arcady Dyskin, Maxim Lebedev, Boris Gurevich</i>
	18:10	End of session
	20:00	Muhlhaus Gala Banquet Announcement of the 12th IWBDG 2020 host group

Wednesday 24 May		Session 3. Numerical modeling of failure, localized deformation and gravity driven flows Chairs: Manuel Pastor (University of Madrid, Spain), Pablo Mira (Cedex, Spain), Claudio Tamagnini (University of Perugia, Italy)	Session 4. Soil-tool/machine interaction Chairs: Khalid Alshibli (University of Tennessee, USA), Mustafa Alsaleh (Caterpillar, USA)
	08:40	Keynote Session 4. Sand to mud to fording: Modeling and simulation for off-road ground vehicle mobility analysis <i>Dan Negrut, Hammad Mazhar (University of Wisconsin-Madison, USA)</i>	
	09:20	Micromechanical modelling of suffusion: towards the stability analysis of hydraulic structures <i>Antoine Wautier, Stéphane Bonelli, François Nicot</i>	Large deformation modelling of soil-machine interaction in clay <i>Chong Peng, Wei Wu</i>
	09:40	Comparison of the Rudnicki-Rice and Vermeer bifurcation criteria <i>Marte Gutierrez</i>	Tracing the salt crystallization front in limestone using the DRMS <i>Sevasti Modestou, Ioannis Ioannou</i>
	10:00	Second gradient model and a novel cohesive element for plane stress localization problems in damaged concrete <i>Panagiotis Kotronis, Frédéric Collin, Gwendal Jouan, Marc Soufflet</i>	Analysis of bearing capacity in sand under eccentric and inclined loading using a bounding surface plasticity model <i>Dimitrios Loukidis, Nektaria Ygeionomaki</i>
	10:20	Coffee Break	
		Session 3 (continued). Numerical modeling of failure, localized deformation and gravity driven flows Chairs: Manuel Pastor (University of Madrid, Spain), Pablo Mira (Cedex, Spain), Claudio Tamagnini (University of Perugia, Italy)	Session 5: Micromechanics and multi-scale analysis of instabilities and degradation I Chairs: Gioacchino Viggiani (University of Grenoble Alpes, France), Jose Andrade (California Institute of Technology, USA)
	10:40	Keynote Session 3. Multiscale poromechanics: Fluid flow, solid deformation and anisotropic plasticity <i>Ronaldo Borja (Stanford University, USA)</i>	
	11:20	Fast landslide propagation: alternative modelling techniques <i>Manuel Pastor, M. Martín Stickle, A. Yagüe, D. Manzanal, P. Mira, J.A. Fernandez Merodo, P. Dutto</i>	Modelling fabric evolution of granular materials along proportional stress paths <i>Peijun Guo, Jinshan Shi</i>
	11:40	Bifurcation criteria for localisation in multi-physical models <i>Manolis Veveakis, Thomas Poulet, Klaus Regenauer-Lieb</i>	Cemented sands: from field deformation to inter-particle bonding <i>Ilaria Soriano, Elli-Maria Charalampidou, Helen Lewis, Gioacchino Viggiani, Gary Couples, Jim Buckman, Edward Andò</i>

Wednesday 24 May	12:00	Modelling creeping and catastrophic failure of thermo-mechanically driven landslides <i>Antonis Zervos, Eduardo Alonso, Nuria Pinyol</i>	Initiation and propagation of compaction bands in a porous sandstone with pre-induced shear bands <i>Elli-Maria Charalampidou, Sergei Stanchits, Georg Dresen</i>
	12:20	Material point method modelling of landslides with coupled segregation <i>Benjy Marks, Itai Einav, Pierre Rognon</i>	On the three-dimensional extension of the micromechanically-based H-model <i>Hao Xiong, Zhenyu Yin, Francois Nicot</i>
	12:40	Microstructural effects on strain localization in a multiscale model for hydro-mechanical coupling <i>Bram van den Eijnden, Pierre Bésuelle, Frédéric collin, René Chambon</i>	Failure of crushable grains using a three-dimensional discrete element model <i>François Nader, Claire Silvani, Irini Djeran-Maigre</i>
	13:00	Review and comparison of plasticity models for generalised continua <i>Fahad Gulib, Stefanos-Aldo Papanicolopoulos</i>	A micro-mechanical analysis of induced anisotropic damage in initially anisotropic materials <i>Jianfu Shao, Wanqing Shen, Hamid Ghorbanbeigi</i>
	13:20	End of sessions	
	13:30	Lunch	
	14:30	Kourion and Paphos archaeological sites	
	19:30	Paphos old port, dinner on your own	

Thursday 25 May		Session 6. Geomechanics for Energy, Environment and Geophysics Chairs: APS Selvadurai (McGill Univ, Canada), Klaus Regenauer-Lieb, Manolis Veveakis (University of New South Wales, Australia)	Session 7. Micromechanics and multi-scale analysis of instabilities and degradation II Chairs: Gioacchino Viggiani (University of Grenoble Alpes, France), Jose Andrade (California Institute of Technology, USA)
	08:40	Keynote Session 6. An X-FEM algorithm for modeling of multi-zone hydraulic fracturing in saturated porous media <i>Nasser Khalili, Mohammad Vahab (University of New South Wales, Australia)</i>	
	09:20	Seismic wave field generation in heterogeneous geological media containing multiple cavities <i>Ioanna-Kleoniki Fontara, Petia Dineva, Frank Wuttke, George Manolis</i>	Strain localization in elastic-plastic high performance fiber reinforced cementitious composites subjected to plane stress loading <i>Marta Miletic, Dunja Peric</i>
	09:40	Multiscale investigation of microcrack-induced instability in rocks <i>Mahdad Eghbalian, Richard Wan</i>	Hill's lemma of homogeneity for granular materials and discrete structures Denis Caillerie
	10:00	Borehole strengthening in gas wells from near borehole drying <i>Euripides Papamichos</i>	Borehole instabilities in granular rocks revisited: a multiscale perspective <i>Huanran Wu, Ning Guo, Jidong Zhao</i>
	10:20	Coffee Break	
	10:40	Keynote Session 7. Multiscale modelling of strain localisation in sand <i>Jidong Zhao (Hong Kong University of Science and Technology, Hong Kong)</i>	
	11:20	Wormhole development in carbonate rocks during CO ₂ acidized water flow <i>Patrick Selvadurai, Cyrille Couture</i>	Relative humidity induced degradation of mechanical behaviors of a clayey rock under constant strain rate loadings <i>Zaobao Liu, Jianfu Shao</i>
	11:40	Geomechanical modelling of pore collapsing in soft porous rocks: insights from triaxial experiments and numerical simulations in sandstone, mudstone and shale samples <i>Mustafa Sari, Thomas Poulet, Manolis Veveakis</i>	Numerical analyses on formation of vortex-/anti-vortex- structures in granular bodies using DEM <i>Jacek Tejchman, Jan Kozicki, Michal Nitka</i>

Thursday 25 May	12:00	The role of acidizing in hydraulic fracturing, from a chemo-hydro-geomechanical point of view <i>Manman Hu, Manolis Veveakis, Thomas Poulet, Klaus Regenauer-Lieb</i>	Restoring mesh independency in FEM-DEM multi-scale modelling of strain localization using second gradient regularization <i>Jacques Desrues, Albert Argilaga, Stefano Dal Pont, Gael Combe, Denis Caillerie, Trung Kien Nguyen</i>	
	12:20	Modelling of the progressive failure in a wellbore multilateral junction with Cosserat model <i>Panos Papanastasiou</i>	Strain localization as a problem of topological changes in mesoscopic granular structures <i>Nejib Hadda, Richard Wan, Francois Nicot, Felix Darve</i>	
	12:40	A simplified, fully coupled dual-porosity reservoir geomechanics model for production in tight formations <i>Yarlong Wang, Fotios Karaoulanis, Xiang Li</i>		
	13:00	Lunch		
	Session 8. Micromechanics and multi-scale analysis of instabilities and degradation III Chairs: Gioacchino Viggiani (University of Grenoble Alpes, France), Jose Andrade (California Institute of Technology, USA)			
	14:20	Keynote Session 8. Constitutive modeling of granular geo-materials under high-speed impact <i>Takashi Matsushima (University of Tsukuba, Japan)</i>		
	15:00	Multiscale simulation of chemical fault reactivation <i>Martin Lesueur, Manolis Veveakis, Thomas Poulet</i>		
	15:20	Full field measurements of compaction localization in porous rocks by 3D digital image correlation <i>Athanasios Papazoglou, Gioacchino Viggiani, Christophe Dano, Giuseppe Buscarnera</i>		
	15:40	Strain localisation in sand at the grain-scale: behaviour upon load reversal and multiscale considerations <i>Edward Andò, Erminio Salvatore, Jacques Desrues, Pascal Charrier, Jean-Benoit Toni, Gioacchino Viggiani</i>		
	16:00	Analysis of shear bands in sand under reduced gravity conditions <i>Jason Marshall, Ryan Hurley, Daniel Arthur, Ivan Vlahinic, Brian Trease, Karl Iagnemma, Carmine Senatore, Jose Andrade</i>		
16:20	Instability analysis of granular media via a purely micromechanical constitutive model <i>Mehdi Pouragha, Richard Wan</i>			
16:40	Workshop Closure			