



micro^{to}MACRO

micro to MACRO
mathematical modelling
in soil mechanics

May 29 – June 1 2018
Reggio Calabria Italy

University *Mediterranea* of Reggio Calabria
DICEAM
GNFM



PROGRAMME

Monday, May 28th – è Hotel

18:30 – 19:30 Registration at è Hotel
19:30 Welcome cocktail at è Hotel

Tuesday, May 29th – Main Hall of Engineering Departments

08:30 – 09:30	Registration		
09:30 – 10:00	Opening Ceremony		
10:00 – 10:35	Keynote Lecture 1	14:45 – 15:20	Keynote Lecture 2
10:35 – 11:15	Session M1	15:20 – 16:20	Session A1
11:15 – 11:35	Discussion	16:20 – 16:40	Discussion
11:35 – 12:05	Coffee Break	16:40 – 17:10	Coffee Break
12:05 – 13:05	Session M2	17:10 – 18:10	Session A2
13:05 – 13:25	Discussion	18:10 – 18:30	Discussion
13:25 – 14:45	Lunch		
19:30	Choir Concert at è Hotel		

Wednesday, May 30th – Main Hall of Engineering Departments

09:00 – 09:35	Keynote Lecture 3	14:40 – 15:15	Keynote Lecture 5
09:35 – 10:35	Session M3	15:15 – 16:15	Parallel Session A3
10:35 – 10:55	Discussion	16:15 – 16:35	Discussion
10:55 – 11:25	Coffee Break	16:35 – 17:05	Coffee Break
11:25 – 12:00	Keynote Lecture 4	17:05 – 18:05	Parallel Session A4
12:00 – 13:00	Session M4	18:05 – 18:25	Discussion
13:00 – 13:20	Discussion		
13:20 – 14:40	Lunch		

Wednesday, May 30th – Peloritani Academy of the “Periclitantes”, Messina

15:30 – 17:15 Parallel CAPRIZ Session

Thursday, May 31st – Main Hall of Engineering Departments

09:00 – 09:35	Keynote Lecture 6	14:40 – 15:15	Keynote Lecture 8
09:35 – 10:35	Session M5	15:15 – 16:15	Session A5
10:35 – 10:55	Discussion	16:15 – 16:35	Discussion
10:55 – 11:25	Discussion	16:35 – 17:05	Discussion
11:25 – 12:00	Keynote Lecture 7	17:05 – 18:05	Session A6
12:00 – 13:00	Session M6	18:05 – 18:25	Discussion
13:00 – 13:20	Discussion		
13:20 – 14:40	Lunch		
20:30	Gala dinner at Restaurant <i>L'Accademia Gourmet</i>		

Friday, June 1st – Main Hall of Engineering Departments

09:00 – 09:35 Keynote Lecture 9
09:35 – 10:35 Session M7
10:35 – 10:55 Discussion
10:55 – 11:25 Coffee Break
11:25 – 12:25 Session M8
12:25 – 12:45 Discussion
12:45 – 12:55 Closure

Monday, May 28th

- 18:30 – 20:00 **Registration at [è Hotel](#)**
- 20:00 **Welcome Cocktail at [è Hotel](#)**

Tuesday, May 29th

- 08:30 – 09:30 **Registration at Main Hall of Engineering Departments**
- 09:30 – 10:00 **Opening Ceremony**

SESSION M1 – Chair: **J.T. Jenkins**

- 10:00 – 10:35 **Keynote Lecture 1: Itai EINAV** - University of Sydney
The effective stress of unsaturated soils thermodynamic connections to intrinsic and measured suctions (Einav E., Liu M.)
- 10:35 – 10:45 Denis CAILLERIE
Cosserat's modelling and homogenization (Caillerie D.)
- 10:45 – 10:55 Maurizio BROCATO
A continuum model of close packing granular materials for the study of rock filled gabions (Brocato M.)
- 10:55 – 11:05 Thomas BARKER
Well-posed continuum equations for granular flow (Barker T., Gray N., Schaeffer D.G., Shearer M., Baker J.L.)
- 11:05 – 11:15 Callum TREGASKIS
Erosion-deposition waves in granular flows (Tregaskis C., Johnson C., Gray N.)
- 11:15 – 11:35 DISCUSSION
- 11:35 – 12:05 COFFEE BREAK

SESSION M2 – Chair: **F. Oliveri**

- 12:05 – 12:15 Stefan LUDING
Upscaling from particles to continuum theory (Luding S.)
- 12:15 – 12:25 James T. JENKINS
Extended shearing of a frictional-elastic aggregate (Jenkins J.T., La Ragione L.)
- 12:25 – 12:35 Silvio BALDINO
Dual porosity-single permeability poromechanics response of an inclined wellbore with no-flow outer boundary (Baldino S., Miska S.Z.)
- 12:35 – 12:45 Jean-Marie KONRAD
A conceptual framework for particle crushing: from the strength of the particle to the evolution of the granular distribution (Salami Y., Konrad J.-M.)

- 12:45 – 12:55 John DE BONO
Investigating the micro mechanics of a non-spherical crushable sand using DEM (de Bono J., McDowell G.)
- 12:55 – 13:05 Giuseppina RECCHIA
Storage and loss moduli in an ideal aggregate of elastic disks, water-saturated (Recchia G., Jenkins J.T., La Ragione L.)
- 13:05 – 13:25 DISCUSSION
- 13:25 – 14:45 LUNCH

SESSION A1 – Chair: **G. Viggiani**

- 14:45 – 15:20 **Keynote Lecture 2: Edward ANDÒ** - Laboratoire 3SR
Experimental access to the mechanics of sand at its constitutive scale (Andò E., Viggiani G., Desrues J.)
- 15:20 – 15:30 Iwona RADOSZ
Photoelastic observation of loading and crushing of a single grain (Leśniewska D., Radosz I., Pietrzak M.)
- 15:30 – 15:40 Magdalena PIETRZAK
Strains inside shear bands observed in tests on model retaining wall in active state (Pietrzak M., Leśniewska D.)
- 15:40 – 15:50 Ting YAO
Quantification of the surface roughness of quartz sand using optical interferometry (Yao T., Baudet B., Lourenço S.D.N.)
- 15:50 – 16:00 Stefanos ATHANASOPOULOS
Mapping grain strains in sand under load using neutron diffraction scanning (Athanasopoulos S.D., Hall S.A., Kelleher J.F., Pirling T., Engqvist J., Hektor J.)
- 16:00 – 16:10 Mir Amid HASHEMI
Analysis of particle contact using frustrated total internal reflection (Hashemi M.A., Heron C.M.)
- 16:10 – 16:20 Saurabh SINGH
Experiments show a second length scale in weakly cohered granular materials (Singh S., Miers J.C., Saldana C.J., Murthy T.G.)
- 16:20 – 16:40 DISCUSSION
- 16:40 – 17:10 COFFEE BREAK

SESSION A2 – Chair: **J. Dijkstra**

- 17:10 – 17:20 James BAKER
3D velocimetry of flowing granular media using dynamic X-ray radiography (Baker J., Guillard F., Marks B., Einav I.)

- 17:20 – 17:30 Zhuang CHENG
Evolution of granular contact gain, loss and movement under shear studied using synchrotron X-ray micro-tomography (Cheng Z., Wang J.)
- 17:30 – 17:40 Max WIEBICKE
Measuring the evolution of contact fabric in shear bands with x-ray tomography (Wiebicke M., Andò E., Viggiani G., Herle I.)
- 17:40 – 17:50 Mengmeng WU
An investigation of the fracture surface from 3D fragment reassembly (Wu M., Wang J.)
- 17:50 – 18:00 Stephen HALL
Micromechanics of granular media characterised using X-ray tomography and 3DXRD (Hall S.A., Hurley R.C., Wright J.)
- 18:00 – 18:10 Olga STAMATI
In-situ x-ray tests for an image-based FE meso-model for cementitious materials (Stamati O., Roubin E., Andò E., Malecot Y.)
- 18:10 – 18:30 DISCUSSION
- 20:00 Concert of “San Paolo” Choir at [è Hotel](#)

Wednesday, May 30th

SESSION M3 – Chair: C. di Prisco

- 09:00 – 09:35 **Keynote Lecture 3: Tommaso RUGGERI** - University of Bologna
Multiscale phenomena in continuum mechanics: mesoscopic justification of rational extended thermodynamics of gases with internal structure (Ruggeri T.)
- 09:35 – 09:45 Sami BIDIER
Computational homogenisation of granular particle systems towards microcontinuum theories (Bidier S., Ehlers W.)
- 09:45 – 09:55 Eric BAUER
Numerical simulation of the effect of grain fragmentation on the evolution of micro structure quantities (Bauer E.)
- 09:55 – 10:05 Pierre BÉSUELLE
Heterogeneity and variability of clay rock microstructure in a hydro-mechanical double scale FEM×FEM analysis (Pardoën B., Dal Pont S., Desrues J., Bésuelle P., Prêt D., Cosenza P.)
- 10:05 – 10:15 Joana FONSECA
MuMShell project: simulation of one-dimensional compression test (Nadimi S., Fonseca J.)
- 10:15 – 10:25 Kianoosh TAGHIZADEH
Influence of elasto-plastic, cohesive contacts on the bulk stiffness of dense polydisperse packings (Smit H., Kievitsbosch R., Magnanimo V., Luding S., Taghizadeh K.)

- 10:25 – 10:35 Fabio GABRIELI
Granular jamming as controllable stiffness mechanism for medical devices (Blanc L., Pol A., François B., Delchambre A., Lambert P., Gabrieli F.)
- 10:35 – 10:55 DISCUSSION
- 10:55 – 11:25 COFFEE BREAK

SESSION M4 – Chair: M. Brocato

- 11:25 – 12:00 **Keynote Lecture 4: Vanessa MAGNANIMO** - University of Twente
Wave propagation in granular soils: a numerical approach for a micromechanical perspective. (Magnanimo V.)
- 12:00 – 12:10 Wolfgang EHLERS
Hydraulic fracturing in fluid-saturated soil and rock (Ehlers W., Luo C.)
- 12:10 – 12:20 Qixin WU
Investigation of granular material behavior under rotational shear: a discrete element approach (Wu Q., Yang Z.)
- 12:20 – 12:30 Katia BOSCHI
Micromechanical investigation of grouting in soil (Boschi K., di Prisco C.G., Ciantia M.O.)
- 12:30 – 12:40 Shivakumar ATHANI
Steady and dynamic uplift response of anchors embedded in cohesionless granular media (Athani S., Rognon P.)
- 12:40 – 12:50 Geyang SONG
A study of greenfield tunnelling in sands using FEM, DEM, and centrifuge modelling (Song G., Franza A., Elkayam I., Marshall A.M., Klar A.)
- 12:50 – 13:00 —
DEM analysis of jacked open-ended pile (Duan N., Cheng Y.P., Liu J., Yu F.)
- 12:50 – 13:10 DISCUSSION
- 13:10 – 14:30 LUNCH

PARALLEL CAPRIZ SESSION in Messina - Chair: T. Ruggeri

Peloritan Academy of the “Periclitantes”, **Messina**

- 15:30 – 15:45 Tommaso RUGGERI
Introduction
- 15:45 – 16:15 Gianfranco CAPRIZ
Observer independence and molecular flows
- 16:15 – 16:45 James T. JENKINS
Microstructure and particle phase stress in a dense suspension
- 16:45 – 17:15 Paolo M. MARIANO
Spin fluids with second-neighbor interactions: physical foundations and existence results

PARALLEL SESSION A3 in Reggio Calabria – Chair: M. Coop

- 14:30 – 15:05 **Keynote Lecture 5: Farhang RADJAI** - University of Montpellier
Steady and unsteady granular flows inside a viscous fluid (Radjai F., Amarsid L., Muta-baruka P., Delenne J.-Y.)
- 15:05 – 15:15 Georgios BIRMPILIS
Numerical scattering experiments on assemblies of fine-grained particles (Birmpilis G., Nordin M., Dijkstra J.)
- 15:15 – 15:25 Andrea DOMINIJANNI
Effects of fabric changes on transport phenomena and mechanical behaviour of saturated bentonites (Dominijanni A., Guarena N., Manassero M.)
- 15:25 – 15:35 Simona GUGLIELMI
Microstructural changes underlying the macro-response of a stiff clay (Cotecchia F., Guglielmi S., Cafaro F., Gens A.)
- 15:35 – 15:45 Giorgia DI REMIGIO
Compressibility and swelling of an overconsolidated highly plastic Paleogene clay (Di Remigio G., Grønbech G.L., Rocchi I., Zania V.)
- 15:45 – 15:55 Budi ZHAO
Particle migration and clogging in radial flow - a microfluidics study (Zhao B., Liu Q., Santamarina J.C.)
- 15:55 – 16:05 Alessandro TENGATTINI
A micro-mechanics focused experimental investigation of cemented granular materials (Tengattini A., Andò E., Viggiani G., Einav I.)
- 16:05 – 16:25 DISCUSSION
- 16:25 – 16:55 COFFEE BREAK

PARALLEL SESSION A4 in Reggio Calabria – Chair: B. Baudet

- 16:55 – 17:05 Fernando ALVAREZ-BORGES
Stiffness of destructured weak carbonate rock (Alvarez-Borges F., Madhusudhan B.N., Richards D.)
- 17:05 – 17:15 Amy GETCHELL
Geochemical control of laponite dispersions for pore fluid engineering of granular soils (Getchell A., Swanson H., Santagata M.)
- 17:15 – 17:25 Madhusudhan BN MURTHY
Does G_0 of granular materials carry information on their particle characteristics? (Madhusudhan B.N., Todisco M.C.)
- 17:25 – 17:35 Chitta Sai SANDEEP
An experimental study on the tangential contact behavior of soil interfaces (Sandeep C.S., Senetakis K.)

- 17:35 – 17:45 Wei LI
Effect of rubber inclusion on the friction angle at critical state for different host sands (Li W., Kwok C.Y., Senetakis K., Sandeep C.S.)
- 17:45 – 17:55 Hao YANG
Effects of particle 3D shape on packing density, critical state, static instability and liquefaction of sands using a proposed relative state parameter (Yang H., Wang J.)
- 17:55 – 18:15 DISCUSSION

Thursday, May 31st

SESSION M5 – Chair: W. Ehlers

- 09:00 – 09:35 **Keynote Lecture 6: Guy HOULSBY** - University of Oxford
Hyperplasticity: from Micro to Macro (Houlsby G.)
- 09:35 – 09:45 Matias NORDIN
A novel method for upscaling clay aggregation processes (Nordin M., Dijkstra J.)
- 09:45 – 09:55 Dalila VESCOVI
Evolving conditions in granular matters: from numerical DEM results to constitutive modelling (Vescovi D., Redaelli I., di Prisco C.G., Berzi D.)
- 09:55 – 10:05 Vincenzo NARDELLI
A comparison between the experimental contact behaviour of natural sands and the most common theoretical models for normal loading (Nardelli V., Coop M.R.)
- 10:05 – 10:15 Aaron RUSSELL
Retrogressive failure of a static granular layer on an inclined plane (Russell A., Johnson C., Gray N.)
- 10:15 – 10:25 Chico ROCHA
Segregation-induced granular fingering (Rocha C., Johnson C., Gray N.)
- 10:25 – 10:35 Ha BUI
Discrete element modelling of damage growth in cemented materials: The need of down-scaling constitutive models for DEM (Bui H.H., Nguyen G.D.)
- 10:35 – 10:55 DISCUSSION
- 10:55 – 11:25 COFFEE BREAK

SESSION M6 – Chair: P.M. Mariano

- 11:25 – 12:00 **Keynote Lecture 7: Tim RICKEN** - University of Stuttgart
Biological driven phase transitions in fully or partly saturated porous media - a multiscale FEM simulation based on the Theory of Porous Media (Ricken T., Thom A., Gehrke T., Denecke M., Widmann R., Schulte M., Schmidt T.C.)

- 12:00 – 12:10 Nicholas COLLINS-CRAFT
A theory to predict shear band formation in granular media with evolving grain size distributions (Collins-Craft N.A., Stefanou I., Sulem J., Einav I.)
- 12:10 – 12:20 Giulia GUIDA
Linking macro porosity to micro grainsize polydispersity (Guida G., Einav I., Marks B., Casini F.)
- 12:20 – 12:30 Angelo AMOROSI
A nonlinear hyperelastic anisotropic model for soils (Amorosi A., Rollo F., Houlsby G.T.)
- 12:30 – 12:40 Alessandro GAJO
A microscale-inspired chemo-mechanical model for artificially and naturally bonded soils (Gajo A., Cecinato F., Hueckel T.)
- 12:40 – 12:50 Yifey SUN
Theoretical modelling of the state-dependent behaviour of granular soils based on fractional derivatives (Sun Y., Gao Y., Chen C.)
- 12:50 – 13:00 Tsuyoshi HONDA
Aging effects on liquefaction resistance and shear wave velocity in reconstituted sand (Honda T.)
- 13:00 – 13:20 DISCUSSION
- 13:20 – 14:40 LUNCH

SESSION A5 – Chair: S. Luding

- 14:40 – 15:15 **Keynote Lecture 8: Diego BERZI** - Politecnico di Milano
Dense, inhomogeneous, granular shearing (Berzi D., Jenkins J.T.)
- 15:15 – 15:25 Lu JING
Coupled fluid-particle modeling of submerged granular collapse (Jing L., Yang G., Kwok C.Y., Sobral Y.D.)
- 15:25 – 15:35 Matt EVANS
Modeling the effect of moisture on the flowability of granular materials (Ma Y., Evans T.M., Cunningham N., Philips N.)
- 15:35 – 15:45 Irene REDAELLI
Influence of the inertial number on the steady state locus shape (Redaelli I., di Prisco C.G.)
- 15:45 – 15:55 Giang NGUYEN
Mechanism-based constitutive modelling of localised failure: fundamentals and SPH applications (Nguyen G.D., Bui H.H.)
- 15:55 – 16:05 Lu JING
Effects of dilation and contraction on immersed granular column collapse (Yang G., Jing L., Kwok C.Y., Sobral Y.D.)
- 16:05 – 16:15 Krishna KUMAR
Mechanics of granular column collapse in fluid (Kumar K., Delenne J.-Y., Soga K.)

16:15 – 16:35 DISCUSSION

16:35 – 17:05 COFFEE BREAK

SESSION A6 – Chair: **J.C. Santamarina**

- 17:05 – 17:15 Riccardo RORATO
Particle shape distribution effects on the triaxial response of sands: a DEM study (Rorato R., Arroyo M., Gens A., Andò, Viggiani C.)
- 17:15 – 17:25 Mathias TOLOMEO
An assessment of discrete element approaches to infer intergranular forces from experiments on 2D granular media (Tolomeo M., Viggiani G., Roux J.N., Richefeu V., Combe G.)
- 17:25 – 17:35 Meysam GOUDARZY
Anisotropic stress state and shear stiffness in granular materials: RC experiments and DEM simulation (Goudarzy M., Magnanimo V., König D., Schanz T.)
- 17:35 – 17:45 Soukat Kumar DAS
Micromechanical insights of strain rate effect on crushable granular materials (Das S.K., Das A.)
- 17:45 – 17:55 David CANTOR
Compaction process of crushable granular materials (Cantor D., Azéma E., Sornay P., Radjaï F.)
- 17:55 – 18:15 DISCUSSION
- 20:30 **Gala dinner at Restaurant [L'Accademia Gourmet](#)**

Friday, June 1st

SESSION M7 – Chair:

- 09:00 – 09:35 **Keynote Lecture 9: Jean-Noël ROUX** - University Paris-Est
Elasticity and mechanical behaviour of granular materials: some insights from numerical studies of simple systems (Roux J.-N., Khalili M.H., Froiio F., Dequeker C.)
- 09:35 – 09:45 Gaël COMBE
Discrete element modeling of crushable tube-shaped particles (Stasiak M., Combe G., Richefeu V., Villard P., Desrues J., Armand G., Zghondi J.)
- 09:45 – 09:55 Hongyang CHENG
Coupled subpore-scale hydro-mechanical modeling of wave propagation in saturated granular media (Cheng H., Rivas N., Harting J., Luding S., Magnanimo V.)
- 09:55 – 10:05 Xiao TANG
Modelling wave propagation in dry granular materials (Tang X., Yang J.)
- 10:05 – 10:15 Wanda LASCIARREA
Analysis of confined granular systems for load bearing walls (Brocato M., Lasciarrea W.G.)

- 10:15 – 10:25 Peter HOFFMAN
Computation of K-q diagrams for reinforced soil and analogous structures (Hoffman P., Elmagre E.)
- 10:25 – 10:45 DISCUSSION
- 10:45 – 11:15 COFFEE BREAK

SESSION M8 – Chair: A. Amorosi

- 11:15 – 11:25 Luisa OROZCO
Modeling the dynamic fragmentation of a single grain (Orozco L.F., Delenne J.-Y., Sornay P., Radjaï F.)
- 11:25 – 11:35 Giuseppe Maria GRIMALDI
Modelling water flow and ion transport in clay soils: the case of KCl wells in the head of an earthflow (Grimaldi G.M., Pontolillo D.M., De Rosa J., Rizzo E., Di Maio C.)
- 11:35 – 11:45 Erminio SALVATORE
The effects of strain localization on the determination of Critical State seen with experimental and numerical models (Salvatore E., Andò E., Modoni G., Viggiani G.)
- 11:45 – 11:55 Junhwan LEE
The coefficient of lateral earth pressure K_0 subjected to freezing and thawing for granular soils (Lee J., Kim I., Kim G., Hong S., Lee J.)
- 11:55 – 12:05 Abhijit BRAHMBHATT
Particle characterization and flow characteristics of in-situ municipal solid waste (MSW) (Shah M.V., Brahmabhatt A.J.)
- 12:05 – 12:25 DISCUSSION

CLOSURE

	MONDAY TUESDAY	MAY 28, 19:00 MAY 29, 08:30	REGISTRATION REGISTRATION	MONDAY TUESDAY	MAY 28, 20:00 MAY 29, 09:30	WELCOME COCKTAIL AT È HOTEL OPENING CEREMONY			
SESSION	Tuesday, May 29, M1	Tuesday, May 29, M2	Tuesday, May 29, A1	Tuesday, May 29, A2	Wednesday, May 30, M3	Wednesday, May 30, M4	Wednesday, May 30, Messina parallel	Wednesday, May 30, A3 Reggio Calabria parallel	Wednesday, May 30, A4 Reggio Calabria parallel
CHAIR	Jenkins	Oliveri	Viggiani	Dijkstra	di Prisco	Brocato	Ruggeri	Coop	Baudet
KEYNOTE	Einav		Andò		Ruggeri	Magnanimo		Radjai	
	051 Caillerie	011 Luding	018 Lésniewska, Radosz, Pietrzak	009 Baker, Guillard, Marks, Einav	026 Bidier, Ehlers	035 Ehlers, Luo	Tommaso Ruggeri	029 Birmpilis, Nordin, Dijkstra	091 Alvarez-Borges, Madhusudhan, Richards
	072 Brocato	067 Jenkins, La Ragione	019 Pietrzak, Lésniewska	020 Cheng, Wang	081 Bauer	017 Wu, Yang	Gianfranco Capriz	007 Dominijanni, Guarena, Manassero	052 Getchell, Swanson, Santagata
	022 Barker, Gray, Schaeffer, Shearer, Baker	005 Baldino, Miska	025 Yao, Baudet, Lourenco	032 Wiebicke, Andò, Viggiani, Herle	008 Pardoen, Dal Pont, Desrues, Besuelle, Prêt, Cosenza	076 Boschi, di Prisco, Ciantia	James T. Jenkins	058 Cotecchia, Guglielmi, Cafaro, Gens	061 Madhusudhan, Todisco
	042 Tregaskis, Johnson, Gray	001 Salami, Konrad	027 Athanasopoulos, Hall, Kelleher, Pirling, Engqvist, Hektor	034 Wu, Wang	010 Nadimi, Fonseca	012 Athani, Rognon	Paolo M. Mariano	063 Di Remigio, Gronbech, Rocchi, Zania	037 Sandeep, Senetakis
		044 de Bono, McDowell	057 Hashemi, Heron	056 Hall, Hurley, Wright	062 Smit, Kievitsbosch, Magnanimo, Luding, Taghizadeh	013 Song, Franza, Elkayam, Marshall, Klar		069 Zhao, Liu, Santamarina	024 Li, Kwok, Senetakis, Sandeep
		068 Recchia, Jenkins, La Ragione	083 Singh, Miers, Saldana, Murthy	089 Stamati, Roubin, Andò, Malecot	054 Blanc, Pol, Francois, Delchambre, Lambert, Gabrieli	070 Duan, Cheng, Liu, Yu		092 Tengattini, Andò, Viggiani, Einav	048 Yang, Wang
	DISCUSSION	DISCUSSION	DISCUSSION	DISCUSSION	DISCUSSION	DISCUSSION		DISCUSSION	DISCUSSION
	COFFEE BREAK	LUNCH	COFFEE BREAK	EVENING CONCERT	COFFEE BREAK	LUNCH		COFFEE BREAK	

SESSION	Thursday, May 31, M5	Thursday, May 31, M6	Thursday, May 31, A5	Thursday, May 31, A6	Friday, June 1, M7	Friday, June 1, M8
CHAIR	Ehlers	Mariano	Luding	Santamarina	Amorosi	
KEYNOTE	Houlsby	Ricken	Berzi		Roux	
	053 Nordin, Dijkstra	090 Collins-Craft, Stefanou, Sulem, Einav	066 Jing, Yang, Kwok, Sobral	114 Rorato, Arroyo, Gens, Andò, Viggiani	039 Stasiak, Combe, Richefeu, Villard, Desrues, Armand, Zghondi	099 Orozco, Delenne, Sornay, Radjai
	071 Vescovi, Redaelli, di Prisco, Berzi	028 Guida, Einav, Marks, Casini	075 Ma, Evans, Cunningham, Philips	055 Tolomeo, Viggiani, Roux, Richefeu, Combe	094 Cheng, Rivas, Harting, Luding, Magnanimo	043 Grimaldi, Pontolillo, De Rosa, Rizzo, Di Maio
	040 Nardelli, Coop	103 Amorosi, Rollo, Houlsby	049 Redaelli, di Prisco	102 Goudarzy, Magnanimo, König, Schanz	110 Tang, Yang	082 Salvatore, Andò, Modoni, Viggiani
	073 Russell, Johnson, Gray	088 Gajo, Cecinato, Hueckel	077 Nguyen, Bui	041 Das, Das	016 Brocato, Lasciarrea	004 Lee, Kim, Kim, Hong, Lee
	074 Rocha, Johnson, Gray	006 Sun, Gao, Chen	087 Yang, Jing, Kwok, Sobral	098 Cantor, Azéema, Sornay, Radjai	003 Hoffman, Elmagre	015 Shah, Brahmhatt
	079 Bui, Nguyen	014 Honda	097 Kumar, Delenne, Soga			
	DISCUSSION	DISCUSSION	DISCUSSION	DISCUSSION	DISCUSSION	DISCUSSION
	COFFEE BREAK	LUNCH	COFFEE BREAK	GALA DINNER	COFFEE BREAK	CLOSURE