

Scientific Program

Sunday, March 16th 2014

- 9:00-20:00 Reception and Registration
13:00-15:00 **Lunch break**
19:00-20:30 **Dinner**

Open and ongoing scientific discussions in Palazzo Caetani.

Shuttle to the hotels on request: please let us know your preferences by e-mail. We will try to organize free transportation for each of you.

Monday, March 17th 2014

- 9:00-9:30 **Welcome and opening** Opening address
- 9:30-10:00 Gianpietro Del Piero Bounded Cauchy fluxes and pseudobalance equations
- 10:00-10:30 Antonio Carcaterra Energy propagation and storage in metamaterials
- 10:30-11:00 Carlo Massimo Casciola Shock-induced phase transition of a vapor bubble
- 11:00-11:15 Coffee break**
- 11:15-11:45 Patrizio Neff Polyconvexity of the exponentiated Hencky strain energy in plane elastostatics
- 11:45-12:15 Victor A. Eremeyev On effective surface elastic properties for materials with rough boundary or coated by ordered array of nanofibers
- 12:15-12:45 Tomasz Lekszycki Bone tissue as an intelligent material, modeling of its regeneration and functional adaptation
- 12:45-13:15 Holm Altenbach On derivation of the second-gradient theories of plates and shells
- 13:15-14:30 Lunch break at restaurant L' Angolo di Napoli**
- 14:30-15:00 Anil Misra Rate dependent damage model using granular micromechanics and thermo-mechanics frameworks
- 15:00-15:30 Michael J. Leamy Amplitude-dependent dispersion, group velocity, and bandgaps in nonlinear metamaterials
- 15:30-16:00 Vittorio Sansalone Bone remodeling: an energy-driven process?

PARALLEL SESSIONS

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| Session 1 | Session 1 |
| 16:00-16:30 Ewa Mlynarska | Hendrik Donner |
| Modelling of angiogenesis with respect to microstructure characteristics of environment | A shell-like representative volume element for cord-rubber composites |

16:30-16:45 Coffee break

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| 16:45-17:15 | Yanfei Lu
Examination of an initial step of bone fracture healing and its relationship with structural and mechanical characteristics of tissue | Panos A. Gourgiotis
The mode II crack propagation problem in couple-stress elasticity |
| 17:15-17:45 | Maria Teresa Missanelli
Remodelling in statistically oriented fibre-reinforced materials in the arterial wall and its surrounding tissue | Konstantinos Baxevanakis
Interaction of cracks with dislocations and dislocation dipoles in couple-stress elasticity |
| 17:45-18:15 | Maha Zaghoudi
Modeling and numerical analysis of the damage induced compressibility effect in laminated rubber bearing | Stefan Liebenstein
Microstretch continuum modelling for predicting the inelastic behaviour of solid foams |
| 18:15-18:45 | Ekaterina Podolskaya
Equilibrium and stability of hexagonal close-packed crystal structure under finite strain | Raphael Prohl
Development of generalized numerical algorithms for inelastic models |

19:15-21:00 Dinner at restaurant L'Angolo di Napoli**Tuesday, March 18th 2014**

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| 8:50-9:00 | Introductory address by F. dell'Isola – S. Forest | A section honouring the Contribution of Gérard Maugin to Mechanical Sciences |
| 9:00-9:30 | Gérard A. Maugin | The need for higher-order gradient theories, especially in bio-mechanics |
| 9:30-10:00 | Keynote lecture Reinhold Kienzler | Aspects of configurational mechanics |
| 10:00-10:30 | Arkadi Berezovski | Inertial and thermal effects in the internal variable description of microstructure |
| 10:30-11:00 | Jüri Engelbrecht | On solitary pulses in cylindrical biomembranes |
| 11:00-11:15 | Coffee break | |
| 11:15-11:45 | Pierre Seppecher | Linear elastic trusses leading to continua with exotic mechanical interactions |
| 11:45-12:15 | Claude Fressengeas | An elasto-plastic theory of disclinations and dislocations fields |
| 12:15-12:45 | Samuel Forest | Micromorphic and gradient crystal plasticity |
| 12:45-13:15 | Stephan Wulfingoff | Inspection of logarithmic and rank-one defect energies in gradient crystal plasticity – Analytical and numerical solutions for laminate microstructures |
| 13:15-14:30 | Lunch break at restaurant L'Angolo di Napoli | |
| 14:30-15:00 | Marcus Wheel | Assessing the micropolar elastic behaviour of idealized and real heterogeneous materials |

15:00-15:30	Francesco dell'Isola	In order to model metamaterials as continua it is necessary to get rid of Cauchy straightjacket
15:30-16:00	Angela Madeo	Modelling shear boundary layers in fibrous composite reinforcements: a second gradient approach
16:00-16:30	Giuseppe Rosi	Wave propagation at the interface between a fluid and a micro-structured solid modeled as a dipolar gradient continuum
16:30-17:00	Albrecht Bertram	The thermodynamics of finite gradient plasticity
17:15	Visit to Cori and Sermoneta	
20:30	Social Dinner	

Wednesday, March 19th 2014 Giuliano di Roma

10:00-10:15	Introductory address by Francesco dell'Isola	In honor of Prof. Angelo Luongo on occasion of his 60 th birthday
10:15-10:45	Keynote lecture Angelo Luongo	Direct nonlinear 1-dimensional models of cross-deformable and warpable thin-walled beams
10:45-11:00	Coffee break	
11:00-12:00	Keynote lecture Stelios Kyriakides	Propagating instabilities in materials
12:00-12:30	Nicola Rizzi	A 1D higher gradient model derived from the Koiter shell theory
12:30-13:00	Massimo Cuomo	Variational model for crack evolution and implications for the computational analysis
13:00-13:30	Xin-Lin Gao	Strain gradient solution for a three-layer spherical inclusion problem
13:30-15:00	Lunch break	
15:00-15:30	Holger Steeb	The role of liquid blob oscillations on attenuation in porous media
15:30-15:50	Daniele Zulli	Galloping under turbulent wind of 1:1 internally resonant towers
15:50-16:10	Giuseppe Piccardo	A warpable beam model for the analysis of tower buildings
16:10-16:30	Coffee break	
16:30-16:50	Antonio Rinaldi	Microscale second gradient approximations of the damage parameter for quasi-brittle heterogeneous systems
16:50-17:10	Davide Bernardini	A double-inclusion scheme for the modeling of phases interaction energy in shape memory alloys
17:10-17:30	Luca Placidi	Numerical simulation of frequency band-gaps in relaxed micromorphic continua
17:30-17:50	Francesco D'Annibale	Bifurcation and stability of piezoelectric controlled systems loaded by follower forces

17:50-18:10	Ralf Jänicke	Two-scale modelling of extended continua: On kinematic and stress boundary conditions on the small scale
18:10-18:30	Felix Fritzen	Voided materials with internal length scale: a computational study
18:30-18:50	Anne Jung	Modelling of metal foams by a microscopic motivated continuum model

19:00 A typical dinner offered by the city of Giuliano di Roma

Thursday, March 20th 2014

9:00-9:30	Junior keynote lecture Ali Javili	Geometrically nonlinear higher-gradient elasticity with energetic boundaries
9:30-10:00	Loïc Le Marrec	A discrete application of a continuum model: Riemann-Cartan geometry with uniform torsion density to mimimic the wave scattered by a dislocation line
10:00-10:30	Reuven Segev	Notes on hyperstress optimization
10:30-11:00	Martin Ostoja-Starzewski	Tensor random and fractal fields
11:00-11:15 Coffee break		
11:15-11:45	Alexey Porubov	Nonlinear modeling of localized strains in materials using correct continuum limits
11:45-12:15	Sergey Lurie	Gradient theory of microstructure-dependent beams satisfying fundamental symmetry condition (correctness conditions)
12:15-12:45	Arthur Lebéé	An error estimate for the bending-gradient plate model
12:45-13:15	Yves Rémond	Mechanics and Materials, What Strategies for the CNRS in the European Research Framework?
13:15-14:30 Lunch break at restaurant L'Angolo di Napoli		
14:30-15:00	Claude Boutin	On inner resonance in elastic composites Design of media with negative mass or stiffness
15:00-15:45	Keynote lecture Roger Fosdick	Remarks on a generalized continuum with internal corner and surface contact interactions
15:45-16:15	Xanthippi Markenscoff	Dynamic eshelby micromechanics (with inertia effects)
16:15-16:30 Coffee break		
16:30-17:00	Giulio Giuseppe Giusteri	Modelling the sedimentation of filaments in viscous fluids with a second-gradient dissipation functional
17:00-17:30	Alfio Grillo	Growth and remodelling in statistically oriented fibre-reinforced biological tissues
17:30-18:00	Antonio Castellanos	Challenges in the modelling of granular solids as generalized continua
19:15-21:00 Dinner at restaurant Il Gabbiano da Jonathan		

Friday, March 21th 2014

9:00-9:30	Varvara Kouznetsova	Transient computational homogenization for locally resonant acoustic metamaterials
9:30-10:00	Elena A. Ivanova	Non-classical particles and their application for modeling media with non-mechanical properties
10:00-10:30	Lorenzo Bardella	Latent hardening size effect in small-scale plasticity
10:30-11:00	Maurizio Romeo	A micromorphic continuum model for dielectrics
11:00-11:30	Coffee break	
11:30-12:00	Elena Grekova	A class of continuous acoustic metamaterials with resonant frequencies and forbidden bands
12:00-12:30	Denis N. Sheydakov	On stability of inhomogeneous elastic rod made of micropolar material
12:30-13:00	Christian Liebold	AFM- and modeling techniques for the size effect in bending of micromaterials
13:00-13:30	Artem Yuryevich Panchenko	On stability of 2D lattices under finite strain within moment interaction approach using molecular dynamics
13:30-15:00	Lunch at restaurant Il Gabbiano da Jonathan	