UNIVERSITÀ DEGLI STUDI DI CATANIA

The François COSSERAT–Tullio LEVI CIVITA (Coss & Vita)

INTERNATIONAL ASSOCIATED LABORATORY project (LIA)

WORKSHOP

Computational Mechanics of Generalized Continua and Applications to Materials with Microstructure.

Catania, 29 - 31 October, 2015
Scuola Superiore di Catania
Villa San Saverio, via Valdisavoia 9 - Catania

SCIENTIFIC PROGRAMME

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Thursday 29 October 2015

9.00
Opening of the Workshop. Welcome addresses by prof. F. dell'Isola, dr. A. Lebée.

9.45
Introductory Lecture
Prof. K. Rajagopal

Mathematics and Mechanics of bodies described by implicit constitutive equations

Chairman

F. dell'Isola

10.45
Coffee Break

11.15
B. Emek Abali , Wolfgang H. Muller, Francesco dell'Isola

A fundamental methodology for obtaining the weak form and the computation of strain gradient elasticity theories

11.40
Vinh Phuc Tran, Sébastien Brisard, Johann Guilleminot, Karam Sab.

Stress-gradient materials: an analytical exploration

12.30
A. Misra

Micromorphic model derived based upon granular micromechanics

Chairman

A. Lebée

13.00
Lunch at The Scuola Superiore

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15.00
F. dell'Isola, I. Giorgio, M. Pawlikowski, N. L. Rizzi

Non-linear continuum models for planar extensible beams and pantographic lattices of beams: Heuristic homogenization, experimental and numerical examples of equilibrium in large deformation

15.45
L. Greco, I. Giorgio, A. Della Corte , A. Battista

Second gradient shear energies regularization for pantographic 2 D sheets: numerical simulations

Chairman

H. Altenbach

16.10
Cofee Break

16.40
Philip Harrison, Yuri Matos and Marcos Fernández Álvarez

Comprehensive Modelling of Forming Mechanics of Engineering Fabrics Using a Mutually Constrained Pantographic Beam and Membrane Mesh

17.15
Julien Yvonnet, A. Tognevi, Guy Bonnet, M. Guerich

A filter-based computational homogenization method for problems with arbitrary scale separation.

17.40
J.-F. Ganghoffer, K. El Nady, Y. Rahali, I. Giorgio, F. Dell'Isola

Discrete homogenization methods towards second order grade continua. Application to pantographic structures

18.05
L. de Abreu Correa, R. Cottereau, C. Voivret, S. Costa d'Aguiar, E. Bongini

Wave propagation in ballasted railway tracks: a stochastic heterogeneous approach

Chairman

A. Misra

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Friday 30 October 2015

11.00
Visit of the Benedettini Monastry.

Participants will meet in front of the entrance.

15.00
Holm Altenbach, VictorEremeyev, Konstantin Naumenko

Modeling of Solar Panels as Sandwich Structures

15.25
V. Romano, A. Majorana

Charge transport in graphene

15.50
Victor A. Eremeyev, Giuseppe Rosi , Salah Naili

On surface and interfacial anti-plane waves in solids with surface energy

16.15
Müller W.H., Liebold C.

Experiments for higher order theories

Chairman

A. Grillo

16.40
Cofee Break

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17.10
A. Grillo

Remodelling in fibre-reinforced soft biological tissues

17.35
T. Lekszycki, M. Pawlikowski, K. Barcz

Modeling of mechanical and structural evolution of biodegradable materials with microstructure

17.50
Ioannis Stefanou, Jean Sulem, Hadrien Rattez and Emmanuil Veveakis

Strain localization during rapid shearing of a saturated rock layer: Preferred instability wave length and shear band thickness under thermo-poro-mechanical couplings

18.15
R. Serpieri, F. dell'Isola, A. Della Corte, F. Trovascio, L. Rosati

Variational derivation of general finite-deformation two-phase poroelasticity

Chairman

V. Eremeyev

20.30
Social Dinner at "Vico Santa Barbara"

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Saturday 31 October 2015

9.00
Michele Godio, Ioannis Stefanou, Karam Sab, Jean Sulem

Finite elements for micropolar models: numerical aspects and computational properties in elastoplasticity

9.25
Jarkko Niiranen, Sergei Khakalo, Viacheslav Balobanov, Antti Niemi, Bahram Hosseini, Josef Kiendl, Alessandro Reali

Isogeometric Analysis of Gradient-Elastic Thin Structures

9.50
Viacheslav Balobanov, Jarkko Niiranen, Sergei Khakalo

Isogeometric Analysis of Gradient-Elastic Rods and 2D Gradient-Elastic Dynamic Problems.

10.15
Ugo Andreaus; Francesco dell'Isola; Ivan Giorgio; Luca Placidi

Numerical simulations of classical problems in two-dimensional linear second gradient elasticity

Chairman

M. Cuomo

10.45
Coffee Break

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11.15
M. Cuomo, L. Greco

Isogeometric multipatch analysis of continua with second gradient deformation.

11.40
Sergei Khakalo, Jarkko Niiranen, Viacheslav Balobanov

Isogeometric Static and Dynamic Analysis of Gradient-Elastic Plane Strain/Stress Problems with Applications

12.05
Matthieu Maziere

Influence of Yield locus curvature on the Finite Element Luders Band Modelling

Chairman

I. Stefanou