UNIVERSITÀ DEGLI STUDI DI CATANIA

Computational Mechanics of Generalized Continua

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

INTERNATIONAL ASSOCIATED LABORATORY project (LIA)

WORKSHOP


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

SCIENTIFIC PROGRAMME
**Thursday 29 October 2015**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Speaker(s)</th>
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<tbody>
<tr>
<td>9.00</td>
<td>Opening of the Workshop. Welcome addresses by prof. F. dell'Isola, dr. A. Lebée.</td>
<td>Chairman F. dell'Isola</td>
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<tr>
<td>9.45</td>
<td>Introductory Lecture</td>
<td>Chairman F. dell'Isola</td>
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<td></td>
<td>Prof. K. Rajagopal</td>
<td>Chairman F. dell'Isola</td>
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<td></td>
<td>Mathematics and Mechanics of bodies described by implicit constitutive equations</td>
<td>Chairman F. dell'Isola</td>
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<tr>
<td>10.45</td>
<td><strong>Coffee Break</strong></td>
<td>Chairman A. Lebée</td>
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<tr>
<td>11.15</td>
<td><strong>B. Emek Abali, Wolfgang H. Muller, Francesco dell’Isola</strong></td>
<td>Chairman A. Lebée</td>
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<td></td>
<td>A fundamental methodology for obtaining the weak form and the computation of strain gradient elasticity theories.</td>
<td>Chairman A. Lebée</td>
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<td>11.40</td>
<td><strong>Vinh Phuc Tran, Sébastien Brisard, Johann Guilleminot, Karam Sab.</strong></td>
<td>Chairman A. Lebée</td>
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<td>Stress-gradient materials: an analytical exploration</td>
<td>Chairman A. Lebée</td>
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<td>12.30</td>
<td><strong>A. Misra</strong></td>
<td>Chairman A. Lebée</td>
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<td>Micromorphic model derived based upon granular micromechanics</td>
<td>Chairman A. Lebée</td>
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<td>13.00</td>
<td><strong>Lunch at The Scuola Superiore</strong></td>
<td>Chairman A. Lebée</td>
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<tr>
<td>Time</td>
<td>Speaker(s)</td>
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<tr>
<td>15.00</td>
<td>F. dell’Isola, I. Giorgio, M. Pawlikowski, N. L. Rizzi</td>
<td>Non-linear continuum models for planar extensible beams and pantographic lattices of beams: Heuristic homogenization, experimental and numerical examples of equilibrium in large deformation</td>
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<tr>
<td>15.45</td>
<td>L. Greco, I. Giorgio, A. Della Corte, A. Battista</td>
<td>Second gradient shear energies regularization for pantographic 2D sheets: numerical simulations</td>
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<td>16.10</td>
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<td><em>Cofee Break</em></td>
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<td>16.40</td>
<td>Philip Harrison, Yuri Matos and Marcos Fernández Álvarez</td>
<td>Comprehensive Modelling of Forming Mechanics of Engineering Fabrics Using a Mutually Constrained Pantographic Beam and Membrane Mesh</td>
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<tr>
<td>17.15</td>
<td>Julien Yvonnet, A. Tognevi, Guy Bonnet, M. Guerich</td>
<td>A filter-based computational homogenization method for problems with arbitrary scale separation</td>
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<tr>
<td>17.40</td>
<td>J.-F. Ganghoffer, K. El Nady, Y. Rahali, I. Giorgio, F. Dell’Isola</td>
<td>Discrete homogenization methods towards second order grade continua. Application to pantographic structures</td>
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<tr>
<td>18.05</td>
<td>L. de Abreu Correa, R. Cottereau, C. Voivret, S. Costa d’Aguiar, E. Bongini</td>
<td>Wave propagation in ballasted railway tracks: a stochastic heterogeneous approach</td>
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Friday 30 October 2015

11.00
Visit of the Benedettini Monastery.
Participants will meet in front of the entrance.

15.00
Holm Altenbach, Victor Eremeyev, 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

16.40
Coffee Break
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

20.30
Social Dinner at "Vico Santa Barbara"
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

10.15
Ugo Andreaus; Francesco dell'Isola; Ivan Giorgio; Luca Placidi
Numerical simulations of classical problems in two-dimensional linear second gradient elasticity

10.45
Coffee Break
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