Symposium in honour of Professor Davide Bigoni’s 60th birthday

RECENT ADVANCES IN MECHANICS OF SOLIDS AND STRUCTURES

Thursday June 6, 2019

8:00 – 8:30  Registration

8:30 – 9:00  Opening Ceremony (Chair: Luca Deseri)
Welcome by
- Paolo Collini (Rector of the University of Trento)
- Paolo Baggio (Deputy Director DICAM, University of Trento)
- John Willis (University of Cambridge)
- Giulio Maier (Accademia dei Lincei)

9:00 - 10:30  SESSION 1 (Chair: Davide Bigoni)

9:00 – 9:30  J.R. Rice, A. Yehya, Z. Yang
L1 How Relic Fault Zone Structure Guides Transmission of Elevated Pore Pressures from Nearby Fluid Injection Sites

9:30 – 10:00  B. Audoly, J.W. Hutchinson
L2 Buckling Localization in Spherical Shells

10:00 – 10:30  J.R. Willis
L3 Transmission and reflection of waves at a metamaterial/ordinary material interface

10:30 – 11:00  Coffee break and Poster Exhibition

R. Baggio, O.U. Salman, L. Truskinovsky
P1 Nonlinear Elasticity Perspective on Crystal Plasticity
G. Bordiga, L. Cabras, A. Piccolroaz, D. Bigoni
P2 In-plane Floquet-Bloch waves in elastic grids and prestress tuning of structured interfaces
R. Cavuoto, K. Dayal, M. Fraldi, L. Deseri
P3 A peridynamic model for the delamination of thin plates
A. Cazzolli, F. Dal Corso, D. Misseroni
P4 A catastrophe machine based on elastic strips
M. Nardin, D. Veber, F. Dal Corso, A. Piccolroaz, D. Bigoni
P5 Sub Parametric 2D Finite Element for Strain Gradient Theory
G. Rizzi, F. Dal Corso, D. Veber, D. Bigoni
P6 Non-local behavior of hexagonal lattice structures
M. Rossi, D. Veber, M. Gei
P7 Computational model for the cloaking of flexural waves in Kirchhoff-Love elastic plates
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11:00 - 12:30  **SESSION 2** (Chair: John Willis)

11:00 – 11:30  M. Vasoya, A.A. Benzerga, B. Kondori, A. Needleman
L4  **Transformation Strain Kinetics for Non-negative Dissipation**

11:30 – 12:00  N.A. Fleck, M. Mirzajanzadeh, V.S. Deshpande
L5  **Actuation of a cellulose foam due to liquid infiltration**

12:00 – 12:30  S. Pellegrino, Y. Li
L6  **Design of Multi-Stable Morphing Structures**

12:30 – 13:30  **Lunch (and Poster Exhibition)**

13:30 - 15:30  **SESSION 3** (Chair: Alan Needleman)

13:30 – 14:00  H. Petryk
L7  **A Quasi-Extremal Principle in Rate-Independent Theory of Non-Associative Elastoplasticity**

14:00 – 14:30  W.J. Drugan
L8  **Novel Effects Possible in Wave Propagation in Discrete Structures and Composite Materials Due to Stabilized Negative-Stiffness Components**

14:30 – 14:50  P. Podio-Guidugli
L9  **Order, Symmetry, Invariance, Equilibrium, and All that Jazz**

14:50 – 15:10  N.M. Pugno
L10  **Could a spider lift Davide Bigoni?**

L11  **Morphing and shape control in mechano-biology**

15:30 – 16:00  **Coffee break (and Poster Exhibition)**

16:00 - 18:00  **SESSION 4** (Chair: Alexander Movchan)

16:00 – 16:20  A. Corigliano
L12  **Nonlinear mechanics in Microsystems**

16:20 – 16:40  A. Reali
L13  **Advanced modeling and applications of Isogeometric Analysis with a focus on shells and laminates**

16:40 – 17:00  F. Auricchio
L14  **Additive Manufacturing: modeling and computational challenges!!**

17:00 – 17:20  E. Radi, A. Nobili, G. Mishuris
L15  **Time harmonic analysis of antiplane crack in couple stress elastic materials**
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tr>
<td>17:20 – 17:40</td>
<td>M. Gei, L. Morini, Z. Chen, F. Bosi</td>
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<td><strong>L16</strong> Periodic frequency spectra of canonical quasicrystalline axial waveguides</td>
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<td>17:40 – 18:00</td>
<td>M. Brun, M. Morvaridi, G. Carta</td>
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<td><strong>L17</strong> Platonic crystal with low-frequency resonators</td>
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<td>19:00 – 19:30</td>
<td><strong>Guided tour of Sala Depero</strong></td>
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<td>19:30</td>
<td><strong>Social dinner</strong></td>
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RECENT ADVANCES IN MECHANICS OF SOLIDS AND STRUCTURES

Friday June 7, 2019

8:00 – 8:30 Registration

8:30 - 10:30 SESSION 5 (Chair: Henryk Petryk)

8:30 – 9:00 R.M. McMeeking
L18 Storage particle cracking, redox kinetics, interface roughening, and solid electrolyte cracking in lithium-ion batteries

L19 Wave Localization and Dispersion in Discretized Chiral Systems

9:30 – 10:00 G. Mishuris, D. Peck, A. Piccolroaz, M. Wrobel
L20 On the role of the hydraulically induced tangential traction on the fracture walls in the HF problem

10:00 – 10:30 P. Ponte Castañeda, J. Furer
L21 Macroscopic Instabilities and Domain Formation in Elastomeric Composites

10:30 – 11:00 Coffee break (and Poster Exhibition)

11:00 - 12:30 SESSION 6 (Chair: Alberto Corigliano)

11:00 – 11:30 K. Bertoldi, B. Deng, L. Chen, D. Wei
L22 Motion via non-linear waves

11:30 – 12:00 C. Lestringant, B. Audoly
L23 Asymptotically exact strain-gradient models for slender elastic structures

12:00 – 12:30 S. Neukirch, P. Grandgeorge, D.E. Moulton
L24 Open trefoil knots with no self-contact

12:30 – 13:30 Lunch (and Poster Exhibition)

13:30 - 16:00 SESSION 7 (Chair: Katia Bertoldi)

13:30 – 13:45 M. Cont, D. Maturi
T1 Mechanics of Solids and Applied Civil Engineering: two meaningful case studies

13:45 – 14:00 Secret Guest Speaker (on the behalf of T. Hueckel)
Presentation Title to be unveiled

14:00 – 14:20 A. Pandolfi, A. Gizzi, M. Vasta
L25 A microstructural model of crosslink interaction between collagen fibrils in the human cornea

14:20 – 14:40 A. Piccolroaz, N. Gorbushin, G. Mishuris, M. Nieves
L26 Failure propagation in dissimilar elastic lattices

14:40 – 15:00 G. Noselli, M. Arroyo, A. DeSimone
L27 Smart helical structures inspired by the pellicle of euglenids
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15:00 – 15:20  S. Roccabianca, M. Sinha, A. Izadi, R. Anthony
    L28  Bifurcation in finite bending: a novel approach to estimate the mechanical properties of thin layers in situ

15:20 – 15:40  M. Bacca
    L29  Contraction of active soft gels by transient microstructural evolution

15:40 – 16:00  F. Bosi, S. Pellegrino
    L30  Viscoelastoplastic characterisation of highly deformable membranes for stratospheric balloons

16:00 – 16:15  Symposium closure