

**International Workshop  
MULTISCALE INNOVATIVE MATERIALS AND STRUCTURES - MIMS19  
Cetara, Amalfi Coast - February 28- March 02, 2019**



## Workshop Program

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**February 28, 2019**

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**Morning Session:**

**h 08,45** Opening Remarks by Conference Chairs  
Luciano Feo, Fernando Fraternali, Glaucio Paulino, Anthony Rosato

**h 09,30 - 11,30 Mini-Session: *Phd Research* - Chair: *Anthony Rosato***

- 09.30–09.50 **Mariella De Piano** and Valentino Berardi (Univ. Salerno): ***“Continuum and discrete modelling of masonry curved structures”***
- 09.50–10.10 Francesco Ascione, **Luigi Granata** (Univ. Salerno), Saverio Spadea (Univ. Dundee), ***“Numerical Characterization of FRP stirrups produced by filament winding”***
- 10.10– 10.30 **Raffaele Miranda** (Univ. Salerno), Enrico Babilio (Univ. Naples Federico II), Ada Amendola, Ida Mascolo and Fernando Fraternali (Univ. Salerno): ***“Use of tensegrity lattices for the actuation of origami sunscreens”***
- 10.30– 10.50 Giuseppe Ferrara, **Adamo Zinco** and Enzo Martinelli (Univ. Salerno), ***“TRM systems with flax fabrics: experimental tests and insights into the mechanical behavior”***
- 10.50– 11.10 Luciano Feo, Alfonso Orlando, Rosa Penna, **Ilenia Petruccelli** (Univ. Salerno), ***“On the flexural performance of RC beams strengthened with carbon and aramid FRP systems”***
- 11.10– 11.30 **Narinder Singh** (Univ. Salerno), Rupinder Singh (GNDEC Luhiana), IPS Ahuja (Punjabi Univ.), ***“Experimental investigations on sustainable composites for additive manufacturing”***

**h 11,30 - 12,00 Coffee Break**

**12.00 – 13.00: Robert E. Skelton**, Texas A&M University, **General Lecture: *“Tensegrity approximations in continuum mechanics”***

**h 13,00 - 14,00 Lunch**

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February 28, 2019

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***Afternoon Sessions:***

**h 14,00 - 16,00 Mini-Session: Solids - Chair: Fernando Fraternali**

- 14.00–14.40 Thematic keynote lecture: **Raffaele Barretta** Università degli Studi di Napoli Federico II: ***“Recent achievements in nonlocal elasticity and applications to nanostructures”***
- 14.40–15.00 **Ada Amendola** (Univ. Salerno), **Anastasiia Krushynska** (Univ. Trento), **Raffaele Miranda**, and **Fernando Fraternali** (Univ. Salerno): ***“On the bandgap dynamics of tensegrity metamaterials”***
- 15.00–15.20 **Francesco Ascione**, **Luciano Feo**, **Marco Lamberti**, **Rosa Penna** (Univ. Salerno), ***“The effects of freeze/thaw cycles on the dynamic Young’s modulus of elasticity of high-performance steel fiber concrete”***
- 15.20– 15.40 **Giuseppe Failla** (Univ. Reggio Calabria), **Roberta Santoro** (Univ. Messina), **Andrea Burlon** and **Andrea Russillo** (Univ. Reggio Calabria): ***“Frequency and time exact analytical solutions for beams with periodically attached resonators”***
- 15.40–16.00 **Alberto Di Matteo**, **Mario Di Paola**, **Iain Dunn**, **Chiara Masnata** and **Antonina Pirrotta**: (Univ. Palermo) ***“Performance and optimal design of Tuned Mass Damper Inerter for base isolated systems”***

**h 16,00 - 16,30 Coffee Break**

16.30 – 17.10: **Glaucio H. Paulino**, Georgia Institute of Technology, **General Lecture: *“Origami engineering: configurational metastructures and metamaterials”***

**h 17,10 - 18,30 Mini-Session: Solids - Chair: Raffaele Barretta**

- 17.10–17.50 Thematic keynote lecture: **Stéphane Brûle** Menard Group- Institut Fresnel: ***“Perspectives for seismic metamaterials in earthquake engineering”***
- 17.50–18.10 **Domenico De Tommasi** (Polytech. Bari), ***“A class of metamaterials based on the tensegrity concept”***
- 18.10–18.30 **Roberto Brighenti**, **Federico Artoni** and **Mattia Pancrazio Cosma** (Univ. Parma), ***“Mechanics of innovative responsive polymers”***

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March 01, 2019

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08.30 – 09.10: **Patrizia Trovalusci**, Univ. Rome "Sapienza", **General Lecture: "Discrete to scale dependent (non-classical) continuous approaches for materials with microstructure: theoretical and computational issues"**

**Morning Sessions:**

**h 09,10 - 11,10 Mini-Session: Solids - Chair: Robert E. Skelton**

- 09.10–09.50 Thematic keynote lecture: **Fernando Fraternali**, Univ. Salerno: "**Novel acoustic applications of tensegrity structures**"
- 09.50–10.10 **Andrea Micheletti** (Univ. Rome "Tor Vergata"), **Filipe Amarante dos Santos** (Univ. NOVA Lisboa), **Petr Sittner** (Czech Academy of Sciences, Prague), "**Superelastic tensegrities with antagonistic actuation**"
- 10.10–10.30 **Bojan B. Guzina**, **Oudghiri-Idrissi Othman** (Univ. Minnesota), **Shixu Meng** (Univ. Michigan): "**A rational framework for dynamic homogenization of periodic media at finite wavelengths and frequencies**"
- 10.30–10.50 **Andrea Colombi** (ETH Zurich): "**A numerical framework to validate elastic metamaterials in bounded and non-periodic domains: Application to seismic metamaterials.**"
- 10.50–11.10 **Marco Miniaci**, **Raffaele Manna** and **Massimo Ruzzene** (Georgia Institute of Technology): "**Valley based splitting of topologically protected helical waves in elastic**"

**h 11,10 - 11,40 Coffee Break**

**h 11,40 - 13,00 Mini-Session: Solids - Chair: Glaucio H. Paulino**

- 11.40–12.20 Thematic keynote lecture: **Howon Lee**, Univ. Rutgers: "**Micro 3D printing for tunable mechanical metamaterials**"
- 12.20–12.40 **Nicholas Farr**, **Nicola Stehling** and **Cornelia Rodenburg** (Univ. Sheffield), **Jan Schäfer** (Leibniz Inst. Greifswald): "**Secondary electron spectrometry imaging for multi scale microstructure characterization and engineering**"
- 12.40–13.00 **Geminiano Mancusi** (Univ. Salerno), **Alfonso Ferraro** (La.Sp.ed Tirreno): "**Experimental cyclic behavior of adhesive interfaces**"

**h 12,40 - 14,00 Lunch**

**Afternoon Sessions:**

14.00 – 14.40: **Davide Bigoni**, Univ. Trento, **General Lecture: "Slip surfaces, shear bands, and the dynamics of flexural lattices"**

**h 14,40 - 16,40 Mini-Session: Solids - Chair: Patrizia Trovalusci**

- 14.40–15.20 Thematic keynote lecture: **Siegfried Schmauder**, Univ. Stuttgart: "**Multiscale Materials Modeling: New Developments with Special Emphasis on MD-Simulations**"
- 15.20–15.40 **Sonia Marfia** (Univ. Cassino), **Elio Sacco** (Univ. Napoli "Federico II"): "**Computational TFA-based homogenization techniques: review and perspective**"
- 15.40–16.00 **Xiaoyu Xu S.**, **Jianguo Cai** and **Jian Feng** (Southeast University, Nanjing): "**The Energy Absorption Capability Study of Honeycomb Structures with Modified Miura Cells Under Impact Load**"
- 16.20–16.40 **Moritz Wenzel**, **Roberto Andreotti** and **Oreste Bursi** (Univ. Trento): "**Metamaterial-Based Foundation System Endowed with Non-Linear Oscillators for the Protection of Fuel Storage Tanks**"

**h 14,40 - 16,20 Mini-Session: Granular – Chair: Anthony Rosato**

- 14.40–15.20 Thematic keynote lecture: **Benjamin J. Glasser**, Bereket Yohannes, Anna Nachtigal, William G. Borghard and Alberto M. Cuitino Univ. Rutgers: "**Scale up of Heat Transfer in Granular Flows**"
- 15.20–15.40 **Mahmoud Mousavi** (Univ. Karlstad): "**Nonsingular fracture mechanics for granular materials**"
- 15.40–16.00 **Kit Windows-Yule** (Univ. Birmingham): "**New Insights into Pseudo-Thermal Convection in Vibrated Granular Systems**"
- 16.00–16.20 **Marcial Gonzalez** (Univ. Purdue): "**Multi-scale modeling, simulation and characterization of particulate products processing and performance: Driving innovation of pharmaceutical products through mechanistic understanding**"

**h 16,40 - 17,10 Coffee Break**

**h 17,10 - 18,50 Mini-Session: Solids – Chair: Luciano Feo**

- 17.10–17.50 Thematic keynote lecture: **Gennaro Senatore** (Swiss Federal Institute of Technology, EPFL): "**Synthesis and experimental testing of minimum energy adaptive structures**"
- 17.50–18.10 **Giulia Scalet** and **Ferdinando Auricchio** (Univ. Pavia), **Stefano Pandini** (Univ. Brescia), **Massimo Messori** (Univ. Modena e Reggio Emilia), **Maurizio Toselli** (Univ. Bologna): "**Shape memory effect in semi-crystalline networks: from experimental evidences to macroscopic modeling**"
- 18.10–18.30 **Steven Grey**, **Fabrizio Scarpa** and **Mark Schenk** (Univ. Bristol): "**Self-Stress in Folded Origami Structures**"
- 18.30–18.50 **Mariano Modano** (Univ. Naples Federico II), **Ida Mascolo** and **Fernando Fraternali** (Univ. Salerno): "**On the prestress design of cable stayed bridges**"

**h 17,10 - 18,50 Mini-Session: Granular – Chair: Benjamin J. Glasser**

- 17.10–17.50 Thematic keynote lecture: **Raj Rajamani** Univ. Utah, **Nicolin Govender** Univ. Surrey: "**Discrete Element Simulation of Charge Motion in Grinding Mills and Powder Mixing**"
- 17.50–18.10 **Anthony D. Rosato** and **Denis L. Blackmore** (Univ. Newark): "**Recent Advances in Modeling, Analysis and Simulation of the Dynamics of Granular and Related Flow Fields**"
- 18.10–18.50 **Thorsten Poeschel** Title to be communicated

**h 20,15 Banquet**

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**March 02, 2019**

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**Trip to Ravello: h 8,00 - 16.00**

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