

# 57th Meeting of Society for Natural Philosophy

Complex Material Structures, Natural and Architected  
Paris, 16th – 18th October 2023

## Program

### Monday, 16th October 2023

8:30-9:00 Registration and opening

9:00-9:30 Opening remarks

#### // Session 1: Generalised continua (chaired by Paolo Podio-Guidugli)

9:30-11:00 Commemoration of Gianfranco Capriz  
(Paolo Podio-Guidugli, Antonio Di Carlo)

11:00-11:30 Coffee break

11:30-12:30 **Joe Goddard - Keynote lecture**  
*The entropy of thermodynamic systems out of equilibrium*

12:30-13:00 Isaac Chenchiah  
*Cauchy's Relations for Non-Linear Elasticity*

13:00-14:00 Lunch

#### // Session 2: Complex materials (chaired by Paolo Podio-Guidugli)

14:00-14:30 Yury Grabovsky  
*Probing elastic binodal by nucleation*

14:30-15:00 Marco Morandotti  
*Variational formulation for hierarchical structured deformations*

15:00-16:00 **Graeme W Milton - Keynote lecture**  
*Guided stress: from pentamodes to cable webs to masonry structures*

16:00-16:30 Coffee break

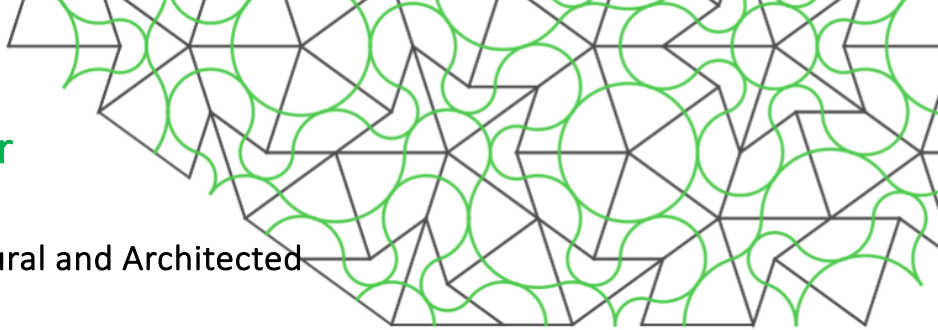
16:30-17:00 Paolo Maria Mariano  
*Measure-valued plastic factors and related energy minimization in SBV spaces*

17:00-17:30 Gaetano Napoli  
*The isotropic-nematic transition on a spherical surface*

17:30-18:00 Fabrizio Davì  
*Reaction-diffusion-drift equations for scintillators. From multi-scale mechanics to gradient flows and Wasserstein measures*

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## // Session 3: Architected materials (chaired by Roberta Zarcone)

- 9:00-10:30 Commemoration of Maurizio Brocato  
(Roberta Zarcone, Antonella Mastrorilli, Paul Nougayrede, Olivier Baverel, Thierry Ciblac)
- 10:30-11:00 Coffee break
- 11:00-12:00 **Maurizio Angelillo - Keynote lecture**  
*Continuum models for masonry*
- 12:00-12:30 Marco Picchi Scardaoni  
*Infinitesimal origami maps for one-degree-of-freedom metasurfaces*
- 12:30-14:00 Lunch

## // Session 4: Mechanics of active and frustrated systems (chaired by Samuel Forest)

- 14:00-14:30 Alberto Salvadori  
*Actin based motility unveiled: modeling how chemical energy is converted into motion*
- 14:30-15:00 Vittorio Sansalone  
*Exploring bone remodeling: bridging generalized continuum mechanics and mechanobiology*
- 15:00-15:30 Fabrizio Cleri  
*Compressive stress and molecular deformation in the cell nucleus*
- 15:30-16:00 Coffee break
- 16:00-17:00 **Eliot Fried- Truesdell Lecture**  
*Some exceptional linkages, their continuum limits, and isometric deformations from helicoids to ruled Möbius bands*
- 17:00-17:30 Vladislav A. Yastrebov  
*Asymmetric elasticity of contact-based architected materials and associated wave dynamics*
- 17:30-18:00 Nicolas Bochud  
*Ultrasound characterization of multiphase architected media: Insights into the mechanics of bio-mimicking systems*
- 19:30 Gala Dinner



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Wednesday, 18th October 2023

// Session 5: Amorphous, glassy and granular systems (chaired by Lev Truskinovsky)

- 9:00-9:30 James T. Jenkins  
*Frame-dependent stress tensors in dilute granular shearing flows*
- 9:30-10:00 Diego Berzi  
*Continuum modelling of granular liquid crystals*
- 10:00-10:30 Mathieu Caruel  
*TBA*
- 10:30-11:00 Coffee break
- 11:00-11:30 Julien Réthoré  
*On the failure of quasi-periodic architected materials*
- 11:30-12:00 Arnav Gupta  
*Nucleation and development of multiple cracks in thin composite fibers via the inverse-deformation approach*
- 12:00 Closing remarks