



# 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, Epifanio Virga, 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 Reuven Segev  
*On proto-galilean dynamics*

13:00-14:00 Lunch

**// Session 2: Complex materials (chaired by Samuel Forest)**

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*

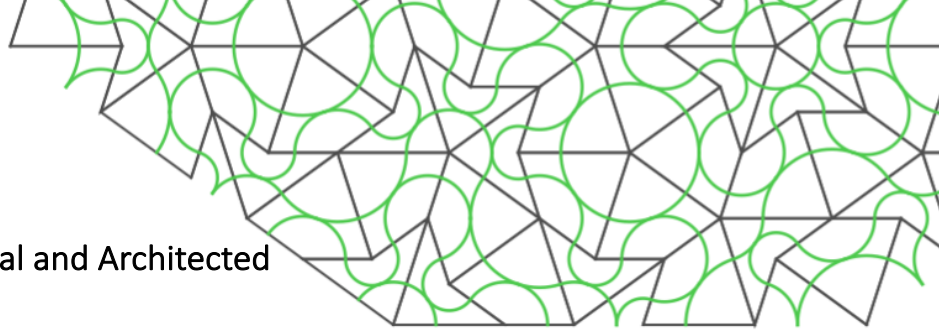
17:30-18:00 Francesco Mainardi  
*On the application of special functions in complex materials including linear viscoelastic and dielectric media*

18:00-18:30 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, Alain Ehrlacher, Antonella Mastrorilli, Mathias Fantin, Paul Nougayrede)
- 10:30-11:00 Coffee break
- 11:00-12:00 **Maurizio Angelillo - Keynote lecture**  
*Continuum models for masonry*
- 12:00-12:30 Arielle Blonder  
*Breaking the Mould: new materiality in fibre composites (FRP), as architected matter*
- 12:30-13:00 Vladislav A. Yastrebov  
*Asymmetric elasticity of contact-based architected materials and associated wave dynamics*
- 13:00-14:00 Lunch

## // Session 4: Mechanics of active and frustrated systems (chaired by Roberto Paroni)

- 14:00-14:30 Giuseppe Zurlo  
*Extended kinematics of growing solids*
- 14:30-15:00 Alberto Salvadori  
*Actin based motility unveiled: modeling how chemical energy is converted into motion*
- 15:00-15:30 Vittorio Sansalone  
*Exploring bone remodeling: bridging generalized continuum mechanics and mechanobiology*
- 15:30-16:00 Fabrizio Cleri  
*Compressive stress and molecular deformation in the cell nucleus*
- 16:00-16:30 Coffee break
- 16:30-17:30 **Eliot Fried- Truesdell Lecture**
- 17:30-18:00 Anil Misra  
*Higher-order continuum models based upon granular micromechanics predict metamaterials with granular motif: theory and experiments*
- 18:00-18:30 Salah Naili  
*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*
- 10:00-11:00 **Phoebus Rosakis - Keynote lecture**  
**To be announced**
- 11:00-11:30 Coffee break
- 11:30-12:00 Julien Réthoré  
*On the failure of quasi-periodic architected materials*
- 12:00-12:30 Francesco dell'Isola  
*Principle of virtual work as foundational framework for metamaterial invention and rational design*
- 12:30 Closing remarks