Nonlinear Elasticity: Modelling of multi-physics and applications, a Euromech/ICMS colloquium celebrating the 80th birthday of Prof. Ray Ogden FRS

Monday 25 – Thursday 28 March 2024

The programme is subject to change. All times are British Summer Time (BST).

MONDAY 25 March 2024	
09.00 - 09.40	Registration and Refreshments
09.40 - 09.50	Welcome and Housekeeping
Session 1	Chair: Ray Ogden
09.50 - 10.30 Keynote Talk	**Gerhard Holzapfel**, Graz University of Technology *The development of a building block for a structural artery model*
10:30 – 10:55	**Xiqiao Feng**, Tsinghua University *Biochemomechanical coupling theory of lymph nodes*
10:55 – 11:20	**Andrea Menzel**, TU Dortmund *An IGA approach to chemo-electro-mechanical coupling in exoelectricity-induced bone remodelling*
11.20 - 11.50	Refreshments
Session 2	Chair: Martine Ben Amar
11:50 – 12:15	**Xiaoyu Luo**, University of Glasgow *An incompatibility and stress-driven volumetric growth law*
12:15 - 12.40	**Arya Amiri**, University of Waterloo *Regional Heterogeneity in Aortic Aneurysms: A Method for Finite Element Analysis*
12.40 - 14.00	Lunch, Group photo
Session 3	Chair: Ciprian Coman
14.00 - 14.25	**Davide Bigoni**, Trento University *Solids from structures with architected instabilities*
14:25 -14:50	**Martine Ben Amar**, Ecole Normale Superieur *Creases and cusps in growing soft matter*
14:50 – 15:15	**Pingping Zhu**, Harbin Institute of Technology ShenZhen *Analysis of the Mullins effect in buckling instability of double-network hydrogel beams under swelling equilibrium*
15.15 - 15.45	Refreshments
Session 4	Chair: Andrea Menzel
15:45 – 16:10	**Mikhail Itskov**, RWTH Aachen University *Modeling of softening behavior by deep symbolic regression*
16:10 – 16:35	**Mokarram Hossain**, University of Swansea *On biaxial experimental characterizations of soft polymers*
16:35 - 17.00	**Federico Bosi**, UCL *Direct stress and yielding determination in inflatable membranes of arbitrary shapes*
17.00	Welcome Reception, hosted at ICMS

TUESDAY 26 MARCH 2024	
Session 5	Chair: Luis Dorfmann
9:15 – 9:55 Keynote Talk	**Lihua Jin**, University of California, Los Angeles *Non-equilibrium stimuli-responsive soft materials*
9:55 – 10:20	**Ya-Pu Zhao**, Chinese Academy of Sciences *Thermoelastic constitutive relations for initially-stressed elastomers: Application to the pore expansion of kerogen under in-situ stresses*
10:20 – 10:55	**Laurence Brassart**, Oxford University *Chemo-mechanics of biodegradable polymer networks*
10.55 - 11.25	Refreshments
Session 6	Chair: Laurence Brassart
11:25 – 11:50	**Shaoxing Qu**, Zhejiang University *A thermodynamic theory coupling photo-chemo-mechano interactions for light-responsive hydrogel*
11:50 – 12:25	**Mahmmod Jabareen**, Israel Institute of Technology *Multiscale modeling of nearly incompressible polymer composites*
12.25 - 12.50	**Zaoyang Guo**, Harbin Institute of Technology ShenZhen *An extended Hertz model for incompressible Mooney- Rivlin half-space under finite spherical indentation*
12.50 - 13.30	Lunch
Session 7	Chair: Patrizio Neff
13.30 - 13.55	**Roger Bustamante**, Universidad de Chile *Circumferential shear for an incompressible non-Green elastic cylindrical annulus*
13:55 – 14:20	**Max Gei**, University of Trieste *On the role of the incompressibility constraint in soft dielectric composites with high phase contrast*
14:20 – 14:55	**Nhung Nguyen**, The University of Chicago *Nonlinear fibre-reinforced membranes with activated fibres*
14.55 - 15.30	Refreshments
Session 8	Chair: Kostas Soldatos
15:30 - 15:.55	**Valentina Balbi**, University of Galway *Cancelling the elastic Poynting effect with geometry*
15:55 – 16:20	**Andrea Nobili**, University of Modena and Reggio Emilia *Some remarks on the Love hypothesis in nonlinear elasticity*
16:20 – 16:55	**David Steigmann**, Berkeley *A Cosserat model of elastic solids reinforced by curved and twisted fibres*
19:00	Colloquium Dinner at https://www.apexhotels.co.uk/destinations/edinburgh/restaurants/metro/

WEDNESDAY 27 MARCH 2024	
Session 9	Chair: Massimiliano Gei
9:15 – 9:55 Keynote Talk	**Oscar Lopez-Pamies**, University of Illinois, Urbana-Champaign *The magnetoelastic behaviour of elastomers filled with ferrofluid inclusions: Theory and numerical implementation*
9:55 – 10:20	**Xudong Liang**, Harbin Institute of Technology ShenZhen *Phase transforming metamaterial with magnetic interactions*
10:20 – 10:55	**Quan Zhang**, University of Galway *Hard-magnetic soft elastic metamaterials for tunable wave manipulation*

10.55 - 11.25	Refreshments
Session 10	Chair: Giuseppe Saccomandi
11:25 – 11:50	**Rui Xiao**, Zhejiang University *A new micro-macro transition for hyperelastic materials*
11:50 – 12:25	**Kostas Volokh**, Israel Institute of Technology *Nonlinear elasticity for modelling fracture of soft materials*
12.25 - 12.50	**Prashant Saxena**, University of Glasgow *A fully coupled nonlinear magnetoelastic thin shell formulation*
12.50 - 13.30	Lunch
Session 11	Chair: Valentina Balbi
13.30 - 13.55	**Luis Dorfmann**, Tufts University *The electric breakdown of dielectric elastomer plates*
13:55 – 14:20	**Souhayl Sadik**, Aarhus University *Nonlinear Anisotropic Viscoelasticity*
14:20 – 14:55	**Yasemin Sengul**, Cardiff University *A variational approach to strain-limiting viscoelasticity*
14.55 - 15.30	Refreshments
Session 12	Chair: Michel Destrade
15:30 - 15:.55	**Giuseppe Saccomandi**, Universita degli Studi di Perugia *Solitary waves in quasi-incompressible dispersive hyperelastic materials:* *An application to martensitic alloys*
15:55 – 16:20	**Luigi Vergori**, Universita degli Studi di Perugia *Waves in dispersive elastic solids*
16:20 – 16:55	**Karima Khusnutdinova**, Loughborough University *On the extended KdV equation, longitudinal bulk strain solitons and undular bores*
	Posters session

THURSDAY 28 MARCH 2024	
Session 13	Chair: Davide Bigoni
09.15 - 09.40	**Fan Xu**, Fudan University *Curvature regulates wrinkling patterns on surfaces*
09:40 – 10:05	**Yang Liu**, Oxford University *Surface wrinkling in film/substrate bilayers: Influence of material inhomogeneity and anisotropy*
10:05 – 10:30	**Michel Potier-Ferry**, Université de Lorraine *Asymptotic numerical method for hyperelasticity*
10.30 - 11.00	Refreshments
Session 14	Chair: Karima Khusnutdinova
11:00 – 11:25	**Mingchao Liu**, Birmingham University *Discrete differential geometry-based model for the snapping analysis of axisymmetric shells*
11:25 – 11:50	**Matteo Taffetani**, Edinburgh University *Curvature controls beading in soft elastic cylinders*
11:50 – 12:15	**Ciprian Coman**, Huddersfield University *Wrinkling instabilities of spinning discs*
12.15 - 14.00	Lunch
	End of Colloquium