

Minisymposia sessions

Monday 1330-1530

Student online

CC011	CC012	CC013	CC014
At the interface between analytical methods and high performance computing in fluid mechanics Radu Cimpeanu and Matthew Moore	Mathematical Modelling in the Social Sciences Ben Goddard and Greg Pavliotis	Nonlinear Surface and Internal Waves Emiliano Renzi and Alberto Alberello	Advances and challenges in the modelling of multiscale, complex, and heterogeneous materials Dr Ariel Ramirez Torres and Dr Raimondo Penta
Exploring a new dimension in high-speed liquid-liquid impact Matthew Moore and Radu Cimpeanu	Bounded Confidence Models of Opinion Dynamics Benjamin Goddard	Theoretical and numerical investigations of extreme waves through oblique soliton interactions Anna Kalogirou	A Quasilinear Viscoelastic Model for the cyclic compression of all-polymer syntactic foams Sy-Ngo Nguyen
Active control of thin liquid film flows using a hierarchy of models Susana Gomes	The Imagined Electorate: The role of subjective perception and objective difference in modelling vote choice Alisa Henderson	A dissipative Nonlinear Schv" (g)liding model for surface waves propagating in sea ice Alberto Alberello	Multiphase Flow in Dual Scale Porous Media during Resin Infusion Process of Composite Manufacturing Ruoyu Huang
Lubrication layer driven capillary-scale rebound dynamics: A pseudo-spectral approach Katie Phillips	Supervised learning for mean field consensus control Sara Bicego	Transition from elongating to squeezed interfacial ring waves on a current Karima Khusnudinova	On the role of elasticity in the quasi-static decohesion of biological systems Salvatore Di Stefano
Optimal control of multiphase flows: Stretches and Wobbles: Probing the stability and bifurcation of a dynamic contact line Alexander Wray	Consensus-based models for global and multi-objective optimisation Claudia Totzeck	Internal solitary wave shoaling and the effect of stratification Magda Carr	Influence of remodelling in a biphasic multicellular aggregate: stress-relaxation and shape recovery Alessandro Giannarini
1450 Parameter Estimation for Macroscopic Pedestrian Dynamics Models from Microscopic Data Susana Gomes	1450 Discussion - Using multiagent systems for developing mathematical models in the social sciences Led by Greg Pavliotis	The Crawford-Saffman-Yuen equation and evolution of inhomogeneous sea-states Raphael Stuhmeier	Double poroelasticity derived from the microstructure Laura Miller
1510 Sedimentation of Thin, Rigid Discs: An Augmented Finite-Element Method Christian Vaquero-Stainer		A theory for steady parasitic capillary ripples on steep gravity waves Phil Trinh	Multi-scale modelling of magnetic nanoparticles delivery and heat transport in vascularized tumour Tahani Al Sariri
EH001 Decision making under uncertainty Eric Hall and Abdul-Lateef Haji-Ali	EH002 Ethics in Mathematics (I) Timothy Johnson	EH104 Mathematical models of plant-soil interactions Matthias Mimsault, Mariya Ptashnyk and Lionel Daguey	
1330 Mutual Information for Explainable Deep Learning of Multiscale Systems Eric Hall	Epidemics, ethics and uncertainty: the roles of statistics versus mathematics Professor Jane L. Hutton	From root hydraulic architectures to macroscopic representations of root hydraulics in land surface models Valentin Couvreur	
1350 Multilevel Double Loop Monte Carlo Method with Importance Sampling for Bayesian Optimal Experimental Design Luis Espath	Aren't the laws of physics the same for everyone? Exploring the ethics of modelling and simulation. Erica Thompson	Control models for crop management Application to Wastewater Reuse Antoine Haddon	
1410 Unifield Landslide hazard assessment using hurdle models Daniela Castro-Camilo	The Alliance for Data Science Professionals: Building trust through standards and accreditation Prof Rachel Hilliam and Dr Mathew Fosshaw	Modelling the impact of root-guided preferential soil moisture flow on plant water uptake Andrew Mair	
1430 Randomized multilevel Monte Carlo for inference Kody Law	Mathematics and ethical citizenship: Analyzing moral orders embedded in ethics and mathematics education Dr. Sikunder Ali	Crowd movement in bacteria colonisation of rhizosphere Matthias Mimsault	
1450 Adaptive Multilevel Monte Carlo Abdul-Lateef Haji-Ali		Modelling Root System Architectures in Challenging Soil Environments Ernst Dirk Schäfer	
1510 Sparse Online Variational Bayesian Inference Vitaliy Zarkhin		Lockhart with a twist: Modelling cellulose microfibril deposition and reorientation reveals twisting plant cell growth mechanisms Rosemary J Dyson	

Tuesday 1600-1830

CC011	CC012	CC013	CC014
Reservoir Computing and Dynamical Systems Jonathan Dawes and Andrea Ceri	Nonlinear Waves and Jets Dr Emiliano Renzi	Wave Problems in Complex Continua Martin Richter	Deep Learning and Inverse Problems Margaret Duff and Matthias J. Ehrhardt
1600 An Infiltration to Echo State Networks Jonathan Dawes	Nonlinear triad interactions of acoustic-gravity waves Usama Kadri	Analytical continuation of two-dimensional wave fields Raphael Assier	Regularising Inverse Imaging Problems Using Generative Machine Learning Models Margaret Duff
1620 Embedding Deep Neural Networks: Learning with Reservoir Computing: Geometric perspective and open problems Lyudmila Grigoryeva	Deformation and dewetting of liquid films under gas jets Ojako Juliet Chinasa	Ray-tracing the Ulam way David Chappell	Deep Neural Networks for Inverse Problems with Pseudodifferential Operators: An Application to Limited Angle Tomography Tatiana A. Bubba
1700 Learning strange attractors with reservoir systems Allen G Hart	Nonlinear dispersive waves generated by moving seabed deformation Emiliano Renzi	Surface waves in nonlocally elastic solids Dr Ludmila Pribaczkikova	A Convex Variational Model of the Blake-Zisserman Type for Segmentation of Low Contrast and Piecewise-smooth Images Liam Burrows
1720 Modelling transitions in epileptic seizure dynamics with a multifunctional reservoir computer Andrew Flynn	Heat transfer in the seabed laminar boundary layer Simone Michele	An enhanced dipole resonance for elastodynamic metamaterials Marie Toubou	Imaging conductivity from current density magnitude via neural networks Bangqi Jin
1740 A Machine Learning Perspective on Driven Dynamical Systems Peter Tino	Wave Dynamics in the Neighbourhood of the Benjamin-Feir Instability Daniel Ratiff	Ultrasonic measurement of stress without material contact Artur Gower	Bayesian Inference using Neural Networks As Data Driven Generative Priors Matthew Holden
1800		Spectral properties of the chiral orthogonal, unitary, and symplectic ensembles - A microwave realization Martin Richter	Inferring a Continuous Distribution of Atom Coordinates from Cry-EM Images using VAEs Jonas Adler
			Discussion
CC029a Ethics in Mathematics (II) Timothy Johnson	EH001 Mathematical modelling of biological oscillations Anne Skeldon and Kyle Wedgwood	EH002 Mathematics in microbiology Sara Jabbari and John Ward	EH104 Modelling the respiratory transmission of Covid-19 Avshalom Offner
1600 A Hippocratic Oath for Mathematicians; necessary, but not sufficient Maurice Chiodo	Dynamic switching of lateral inhibition spatial patterns for cell-cell interactions Paul Glendonning	It's good to talk (but not too quickly): emergent robustness of bacterial conversations due to delayed bifurcations Mohit Dalwadi	A spatially dependent model for rapid prediction of airborne transmission of Covid-19 Ian Griffiths
1620 On epistemic exclusion in the production of mathematical knowledge Colin Jakob Rittberg	Modelling the effects of deep brain stimulation in Parkinson's disease Rafal Bogacz	Founder cell configuration drives competitive outcome within colony biofilms Forydce A. Davidson	Modelling and simulation of airborne virus transmission: Present and Future Dimitris Drakakis
1640 Hard Conversations and Consequences: Updating and Assessing the Ethical Guidelines in Mathematics Catherine A. Buel	Thalamo-Cortical Networks: Reduction, Analysis, and Modulation Stephen Coombes	The impact of boundaries on micro-swimmer distributions in channel flow, and the resultant boundary encounter angles Smitha Maretvadakehpo	Discussion
1700 The influence of Calver's theology on the emergence of mathematical probability and its ethical implications Timothy Johnson	Entrainment dynamics organised by global manifolds in a circadian pacemaker model Kyle Wedgwood	Dynamics of squirmers in a confined anisotropic fluid Marco Mazza	Lifetime of respiratory saliva droplets Avshalom Offner
1720	Modelling the circadian clock Hanspeter Herzel	Multiscale modelling of bacterial populations Philip Pearce	Is localised extraction effective at reducing the spread of respiratory droplets? Cathal Cummin
1740	Why do we procrastinate in going to bed and struggle to get up in the morning? Using mathematics to design light interventions to improve sleep timing Anne C Skeldon	Novel treatment of chronic wounds using bioactive glass fibres - a partial differential equation model Sandeep Shingil	Application of fluid dynamics in modelling indoor airborne disease transmission and developing mitigating strategies Rajesh K Bhatag
1800		Modelling Antibiotic Resistance Gene Spread in Wastewater Treatment Plants Cansu Uluseker	Micro-particle expiratory ejecta driven by buoyant vortex dynamics Emiliano Renzi

Wednesday 1030-1230

CC011	CC012	CC013	CC014
Dispersive hydrodynamics and applications Daniel Ratiff and Thibault Congy	Smectic Fluids: Reduced Dimensionality/Increased Complexity Tyler Shendruk and Marco Mazza	Nonreversible processes: analysis and computations Hong Duong and Nikolas Nüsken	Applied Algebra and Geometry Dr Emilie Dufresne, Dr Dimitra Kosta and Dr Nelly Villamizar
1030 Dispersive hydrodynamics of soliton condensates Gennady El	Theories of smectic A liquid crystals: a critical discussion Timothy J. Stuckin	Variational formulations beyond gradient flows Michiel Renger	Structural and practical identifiability of ERK kinetics Emilie Dufresne
1050 Unidular bores governed by the full water wave equations and Whitham-Boussinesq equations. Rosa Maria Vargas-Magana	Two-dimensional nematics and their applications Prof Apala Majumdar	Piecewise Deterministic Monte Carlo in Infinite Dimensions Joris Bierkens	Representations of partial leaf sets in phylogenetic tree space Gillian Grindstaff
1110 The interaction of internal solitary waves and sea ice in the laboratory Sam Harthorn-Evans	Smectic Layering: A Complex Tensor Representation Jack Paget	Design and implementation of PDMP Monte Carlo Methods Sam Power	Discussion/Networking
1130 Stability of waves on deep water with a constant background shear field Emilian Parau	New patterns of twist-bend liquid crystal phase behaviour Rebecca Walker	Entropic Variational Schemes for Non-Gradient Systems. Daniel Adams	Linear programming complementation Maximilien Gadoleau
1150 Mode-2 internal solitary waves to a three-layer system Alex Doak	A Q-tensor model of smectic-A liquid crystals and its numerical analysis Jingmin Xia	Geometric integrators for optimization Guillaume Franca	Algebraic Degree of Polynomially Constrained Optimization Olga Kuznetsova
1210 Linear stability spectra of a novel long wave-short wave system Marcos Casio-Huerta	Smectic A liquid crystals in non-uniform domains: Modelling the impact of imperfect boundaries Alan J. Walker		Exact reductions of dynamical systems Gleb Pogudin
EH001 Mathematics of the eye Dr Jennifer Tweedy	EH002 Mathematics in single-cell biology Aden Farrow and Bianca Dumitrescu	EH104 Inflammation and the Immune Response Martin R. Nelson and Joanne L. Dunster	
1090 Mathematical Models of a Heterogeneous Vitreous Humour: An Investigation into Vitreochisis and the Tremulous Bursa Laura Bevis	A statistical framework for mapping context-specific regulatory variants using scRNA-seq Anna Cuomo	Inflammation- and stress-driven airway remodelling in asthma Bindi S Brook	
1050 The Human Tear Film Modelling: Marx's line formation Dr Vladimir Zubkov	Unravelling the correlation structure of noise in molecular pathways Lucy Ham	Mechanistic modelling towards designing personalised treatment strategies for eczema Reiko Tanaka	
1110 A mathematical model of aqueous humour production Mariia Dvorishyna	CellRank for directed single-cell fate mapping Marius Lange	Agent-based modelling of macrophage phenotype plasticity facilitating tumour cell intravasation Joshua Bull	
1130 The role of Bayesian inference in understanding Macular degeneration Jessica Crawshaw	Modularity, criticality, and evolvability of a developmental gene regulatory network Berta Verd	Dissecting the cell behaviours driving inflammation and tissue repair through in vivo live imaging, genetics and computational modelling Helen Weavers	
1150 Elastic jump propagation through retinal networks in response to trauma Dr Tamsin A. Spelman	Learning to Segment Cells by Co-localizing Image Patches Steffen Wolf	Modelling the metabolism of DHA Dr Susan Franks	
1210 Mathematical Models of Retinal Degeneration Dr Paul A Roberts	Dynamic inference from single-cell snapshots by optimal transport Stephen Zhang	Pattern Formation and Transition to Chaos in a Chemotaxis Model of Inflammation Valeria Giunta	