Contributed Talks Sessions

student
online

Monday 1140-1240

	CC011 **Climate and Icing** **Radu Cimpeanu**		CC012 **Marangoni and viscous flows** **Anna Kalogirou**		CC013 **Waves** **Phil Trinh**		CC014 **Bayesian inference and networks** **Rachel Hilliam**		CC021 **Stochastic systems and statistical analysis** **Steve Fitzgerald**	
1140	Mathematical models of engine ice crystal icing	Timothy Peters	Surfactant driven cavity flow and contact line singularities	Richard Mcnair	Nonlinear surface ring waves of moderate amplitude	Nerijus Sidorovas	Pharmacokinetic Modelling for Adrenal Support	Rosie Evans	-	-
1200	Relating the Milankovitch Cycles to Earth's Climate	Liam Wheen	Asymptotic corrections for extensional flow	Doireann O'Kiely	Scattering of an Ostrovsky Wave Packet in a Delaminated Waveguide	Jagdeep Tamber	Bayesian inference on a microstructural, hyperelastic model of tendon deformation	James Haughton	Statistical analysis of trade risk, failure, and extreme event propagation in the global economy using multi-level networks	Malvina Bozhidarova
1220	Influence of glacier algae on ice sheet surface melt	Tilly Woods	Laminar drag reduction in surfactant-contaminated superhydrophobic channels	Samuel D. Tomlinson	Magneto-thermoelastic interactions in a nanostructured micropolar orthotropic solid half-space with impedance boundary	Dr. Anand Kumar Yadav	Confirmation Bias Emerges From an Approximation To Bayesian Reasoning	Charlie Pilgrim	Fluctuation-driven transitions in finite time: beyond asymptotic rates for rare events	Steve Fitzgerald

	CC029a **Numerical Analysis** **Alexander Wray**		D002 **Navier-Stokes equations** **Dr. Edmund Chadwick**		EHB001 **Reacting flows and decontamination** **Susana Gomes**		EHB002 **Microswimmers** **Benjamin J. Walker**		EHB104 **Biological Fluids** **Rosemary J Dyson**	
1140	High-order adaptive time-stepping methods for nonlinear fractional DEs	Fadi Awawdeh	Existence and Smoothness of the Navier-Stokes equation by a Boundary Integral representation	Dr. Edmund Chadwick	Reaction dynamics and early-time behaviour of chemical decontamination	Sarah Murphy	Fundamental modes of swimming correspond to fundamental modes of shape: Engineering I-, U-, and S-shaped swimmers	Berk Altunkeyik	Mathematical modelling of poroelastic tissue engineering scaffolds within bioreactors	George Booth
1200	Direct and inverse Solutions for non-homogeneous Wave Equations with Unusual Boundary Conditions	Dr. Taysir Dyhoum	Navier-Stokes equations on a manifold from a non-conservative action principle	Rosa Antonia Kowalewski	Reacting counter-current flow of a binary gas mixture and solids in a silicon furnace	Matthew Shirley	Emergent probability fluxes in confined microbial navigation	Jan Cammann	Pore-network models for haematocrit transport in disordered porous domains reflecting the human placenta	Eleanor Doman
1220	Highly oscillatory quadrature and low-regularity integrators for nonlinear evolution equations	Georg Maierhofer	Building blocks for representing the decay of 3D Navier-Stokes flows and their applications	Koji Ohkitani	Blow-up analysis of fast-slow PDEs with fold type singularities	Thomas Zacharis	The effects of rapid yawing on simple swimmer models and planar Jeffery's orbits	Benjamin J. Walker	Surface-tension-driven evolution of a viscoplastic liquid coating the interior of a cylindrical tube	James Shemilt

Monday 1710-1810

	CC011 **Waves, wakes and jets** **Mark Blyth**		CC012 **Asymptotic analysis** **Anatoly Neishtadt**		CC013 **Linear stability analysis of flows** **Alexander Wray**		CC014 **Homogenisation in modelling** **Ellen Luckins**		CC021 **Bubbles** **Phil Trinh**	
1710	Basic physical mechanisms responsible for three-dimensional wake transition	Andrey I. Aleksyuk	Mathematical modelling of the effect of climate variations on cocoa production	Oluwatosin Babasola	The Linear Stability of Ferrofluids Subject to Non-Uniform Magnetic Fields	Sarah Ferguson Briggs	A systematic upscaling of mass transport models for organoid expansion via homogenisation	Meredith Ellis	Selection mechanisms and complex singularities in the rising bubble problem	Cecilie Andersen
1730	The Effects of Compliance on Various Flow Configurations	Ryan Poole	Combining Dynamic Mode Decomposition with Ensemble Kalman filtering for tracking and forecasting	Stephen Falconer	Thick non-axisymmetric flow on the exterior of a vertical fibre	James Daniel Reilly	Nutrient Transport in a Fibrous Bioreactor Scaffold	Amy Kent	Nonlinear Oscillations of Levitated Air Bubbles	George Hunter-Brown
1750	Free Surface Waves for a Lamb-Oseen Vortex Flow	Emanuele Zuccoli	Averaging and passage through resonances in two-frequency systems near separatrices	Anatoly Neishtadt	Linear stability of a viscous, rotating droplet	Tom Roper	Averaged interface conditions: evaporation fronts in porous media	Ellen Luckins	Feedback control of propagating bubbles in Hele-Shaw channels	Joao V. N. Fontana

	CC029a **Direct numerical simulation for flows** **Radu Cimpeanu**		D002 **Tracking and microrobots** **Rachel Hilliam**		EHB001 **Heat and fire effects** **Steve Fitzgerald**		EHB002 **Hydrogels and rheology** **Rosemary J Dyson**		EHB104 **Many-body systems** **Susana Gomes**	
1710	Lightning Laplace solvers for free-surface problems	Edward Hinton	Three linked spheres microrobotic steady and oscillating motions at low Reynolds number	Laila Gomma Elatrash	Mathematical Modeling and Simulation of Nanofluid Flows	Wasaif Alruwaele	Deformation of swelling and shrinking bilayer beams	Matthew Butler	PDE-constrained optimization for multiscale particle dynamics	Jonna Roden
1730	The Local Anisotropic Basis Function method - a mesh-free framework for high-order DNS in complex geometries	Jack King	Slender active loops	Tom Montenegro-Johnson	Internally Heated Convection at Infinite Prandtl	Ali Arslan	Modelling Encapsulated Stem Cells For Non-Invasive Therapy In The Liver	Simon Finney	Emergent pseudo time-irreversibility in the classical many-body system of pair interacting particles	Gyula Toth
1750	Fully developed free surface 2-D flow liquid layer encounting a 3-D hump	Mansaier lin	Robust trajectory tracking by a multicopter platform with dynamic and information disturbance	Vladimir Turetsky	The Formation of Wildfire Fingers	Sam Harris	Multiscale modelling of cell cytoskeleton rheology	Jakub Koery	Identification of individual traits in collective behaviour of animal groups	Fanqi Zeng

Tuesday 1030-1230

	CC011 **Drops and films** **Marc Pradas**		CC012 **Waves and materials** **Artur Gower**		CC013 **Dynamical systems and applications** **Chris Budd**		CC014 **Bifurcations and operators** **Paul Glendinning**		CC021 **Geophysical, free-surface and vortex dynamics** **Daniel Ratliff**	
1030	Evolution of and deposition from an evaporating sessile annular droplet	L. M. Mills	Modelling elastic wave band-limited uniform diffusers	Finn Allison	Curious dynamics of a golf ball bounce	Stanisław Biber	Brainstem Oscillators and Bifurcations: Understanding How Circadian Clocks Communicate	Jake Ahern	Parallel computations of superfluid vortex systems	Adrian Manuel Parrado Almoguera
1050	Modelling high-speed droplet impact onto an elastic membrane	Michael J. Negus	Theoretical estimates of the parameters of longitudinal undular bores in PMMA bars based on their measured initial speeds	Curtis Hooper	Dynamic tipping in the non-smooth Stommel-box model for thermohaline circulation	Chris Budd	Towards a model-free bifurcation analysis of autonomous slow-fast systems	Mark Blyth	Young and Young-Laplace equations for a static ridge of nematic liquid crystal, and transitions between equilibrium states	Joseph R. L. Cousins
1110	Droplet evaporation on inclined chemical patterns	Marc Pradas	Nemtsov's Problem	Dr Oleg Kirillov	The use of exponential asymptotics versus Borel summation in studying singularly perturbed differential equations	Samuel Crew	A mathematical model reveals complex roles of platelets in hepatitis progression and resolution	Joanne L Dunster	Improved calculations of waterfalls and weir flows	Ellie Mclean
1130	Singularity formation in inverted film flow and transition to dripping	Dmitri Tseluiko	Diffraction by a Right-Angled No-Contrast Penetrable Wedge Revisited: A Double Wiener-Hopf Approach	Valentin Kunz	Optimisation using delay-induced bifurcations	Natalia B. Janson	Bifurcation Analysis for a System of Rational Difference Equations	Bashir Al-Hdaibat	Analytic framework for the flood estimation methods intercomparison	Piotr Morawiecki
1150	The three-dimensional sessile droplet on a non-flat substrate	Chung-Hao Wang	A Quantum Graph Approach to Meta-Material Design	Tristan Lawrie	Parameter-dependent ordinary differential equation (ODE) model identification of systems having local bifurcation	Kyoung Hyun Lee	On the progress of q-fractional differential operators and their applications.	Mohammad Momenzadeh	Phase-space formulation of the Full Lagrangian Approach for dispersed multiphase flows	Chris Stafford
1210	Dynamics of particle aggregation in evaporating and de-wetting films of complex liquids	Junzhe (James) Zhang	Matrix Wiener-Hopf equations and the implicit quadrature scheme	Ian Thompson	Two process models: a nonsmooth dynamics perspective	Mustafa Sayli	Turing bifurcations in reaction-diffusion equations with n components in a bulk-surface system on a sphere	Edgardo Villar-Sepúlveda	Vortex Leapfrogging external to a circular cylinder	Dr Matthew Turner

	CC029a **Networks and quantum modelling** **Stuart Thomson**		D002 **Materials Science and numerical analysis** **Stephen K. Wilson**		EHB001 **Patterns** **Alastair M. Rucklidge**		EHB002 **Cancer and cells** **Evangelia Antonopoulou**		EHB104 **Mathematical biology, cells and imaging** **Mohit Dalwadi**	
1030	Efficient detection of twinning in crystallographic data using modified Rodrigues parameters	Cameron Hall	Analysis of Schwarz algorithms for the modified Euler-Tricomi equation	Alex Kyriakis	Spontaneous pattern formation with Salerno equations: ring-cavity feedback, static instabilities, and mean-field theory	J. M. Christian	A mathematical model of macrophage phenotype switching and its role in the resolution of inflammation.	Suliman Almansour	Asymptotic Analysis Of The Vitamin C Clock Reaction: The Effect of Hydrogen Peroxide Concentration On The Effective Kinetic Law.	Aliya Ali Alsaleh
1050	Simplicial Effective Resistance and Enumeration of Spanning Trees	Kang-Ju Lee	Modelling the Carding of Recycled Carbon Fibre	Joe Roberts	Control of diffusion-driven pattern formation behind a wave of competency	Yue Liu	In silico model for cell therapy in acute liver injury	Evangelia Antonopoulou	A Model for Ultrasonic Transducers with Boundary Dynamics in a High-Temperature Regime	Michael Doherty
1110	Dimensions of Level-1 Phylogenetic Networks	Samuel Martin	Heat spreaders and thermal metamaterials	Eleanor Russell	Understanding Sensory Induced Hallucinations	Rachel Nicks	Modelling spatial and phenotypic heterogeneity in solid tumours in the presence of radiation therapy.	Giulia Laura Celora	A mathematical model to describe the dynamics and scaling of nuclear growth in discrete cytoplasmic volumes	Vivienne Leech
1130	Solving differential equations using neural networks	Mohamed Musa	Lateral Strain and Stress Concentration in Liquid Foam Fracture	Peter Stewart	Mathematics, the Mind and Alzheimer's disease: Patterns of progression on brain graph	Prama Putra	The Study Of Bi-Geometric Fractional Model For The Treatment Of Cancerous Cells Using Radiotherapy	Olivia Ada Obi	Extracellular matrix remodelling by neural crest cells provides a robust signal for collective migration	W. Duncan Martinson
1150	Superadiabatic transitions in Single Switch Surface Hopping	Michael Redenti	An Ultra-weak Discontinuous Galerkin method for Two-Dimensional Elliptic Problems	Helmi Temimi	Rectangle-triangle soft-matter quasicrystals with hexagonal symmetry	Alastair M. Rucklidge	Constant work: Exploring feedback mechanisms in cellular mechanosensation	Josephine Solowiej-Wedderburn	Ventral stress formation and contraction in cell-substrate adhesion	Gordon R. McNicol
1210	-	-	-	-	Minimal Reaction Systems Exhibiting Turing Instabilities	Fraser Waters	Effects of modelling assumptions on the arising dynamics in a cellular automaton model of tumour-immune interactions.	Roisin Stephens	Mathematical and in vitro modelling of high shear thrombosis in a long, thin, microfluidic system	Edwina Yeo

Tuesday 1440-1540

	CC011 **Emergence and self-assembly** **Stuart Thomson**		CC012 **Multiphase and free surface flows** **Simone Michele**		CC013 **Biological applications and dynamical systems** **Sara Jabbari**		CC014 **N/A**		CC021 **Industrial flows and porosity** **Stephen K. Wilson**	
1440	Tilings in block copolymers using Strong Segregation Theory	Merin Joseph	Travelling wave and asymptotic analysis of a multiphase moving boundary model for engineered tissue growth	Jacob Jepson	From Mice, to Machine, to Man: The mathematics and computing of clearance in Alzheimer's disease	Georgia S. Brennan	N/A		Modelling the MIEX water treatment process	Michael Grinfeld
1500	Oscillatory and chaotic dynamics of solitary waves on falling liquid films	Alexander Round	Modelling Confined Nanoscale Films	Jingbang Liu	Dynamical effects of electromagnetic flux on Chialvo neuron map: nodal and network behaviors	Indranil Ghosh			A particle level model for a concept silicon reactor	Brady Metherall
1520	Reconfigurable capillary self-assembly	Stuart Thomson	The effect of an electric field on coating flow on the outer surface of a rotating horizontal circular cylinder	Rebecca A. McKinlay	Stochastic synchronisation in non-locally coupled, noisy oscillators	Jeremy Worsfold			Rivulet flow over and through a porous membrane	Stephen K. Wilson

	CC029a **Aeroacoustics** **Artur Gower**		D002 **Power and batteries** **Reuben O'Dea**		EHB001 **Modelling of crime and infections** **Ian Griffiths**		EHB002 **Cell and vascular modelling** **Anne C Skeldon**		EHB104 **Deformation modelling** **Mark Blyth**	
1440	Reduction of Leading-Edge Noise by Tailored Turbulence Anisotropy	Alistair Hales	A Thermal Single Particle Model with electrolyte(TSPMe)	Mat Hunt	Using an agent-based model to simulate recurrent urinary tract infections	Anas Lasri Doukkali	Towards a multiphase model of vascular network formation in a hydrogel	Georgina Al-Badri	Towards a model of a deformable aerofoil	Mark Blyth
1500	The hydrodynamic instability in quadratic sheared flow over acoustic linings	Matthew King	Generator aggregation and power grid stability	John Moloney	Crime and neighbourhoods, or how the community's actions affect crime rates	Laura Jones	Modelling Regenerative Angiogenesis in Peripheral Nerve Repair	Maxime Berg	Mathematical modelling of metal rolling: the role of elastic and plastic deformation	Frank Flanagan
1520	Sound Propagation in Slowly Varying, Lined, Ducts	Tom White	Uptake of small-scale renewable energy generation: can power grid stability and resilience be maintained?	Reuben O'Dea	Age dependent modelling and its application to COVID-19 outbreak	Kayode Oshinubi	Modelling Differentiating Stem Cells: A Novel View	Saeed Farjami	The deformations of fluid conveying elastic-walled tubes	Daniel Netherwood