UNIVERSITY OF
SURREY

DYNAMICS, BIFURCATIONS AND NUMERICS

HYBRID EVENT
WORKSHOP PROGRAMME

4-7 July 2023

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The Institute of Advanced Studies (IAS) at the University of Surrey sponsors workshops and Fellowships at the 'cutting edge' of science, engineering, social science and the humanities. Through this scheme the Institute fosters interdisciplinary collaborations and encourages a flow of international scholars to visit, enjoy their stay at Surrey and leave behind excellent ideas and innovations.

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INTRODUCTION

Dedicated to the memory of internationally recognised Surrey mathematician Claudia Wulff, this workshop will provide a platform for world-leading experts in PDEs (partial differential equations), hydrodynamics and numerical simulations to address key problems and new approaches inspired by Claudia's work.

The aim of the workshop is to bring together the topics of classical finite-dimensional dynamics with the analysis of infinite dimensional systems generated by PDEs focusing on:
- Systems and bifurcation theory,
- Analysis of PDEs with applications to hydrodynamics,
- Numerical analysis and computation.

Download the Book of Abstracts

Watch recordings of the presentations on Panopto

Poster Presentations available online:
Poster 1 Dominic Stone, University of Surrey
Poster 2 Zhanyuan Hou, London Metropolitan University

Organising committee:
Prof Sergey Zelik, Dr Jonathan Bevan, Dr Bin Cheng, Dr James Grant (University of Surrey) and Dr Anna Kostianko (Imperial College London)

Administrative support:
Ms Louise Jones (Institute of Advanced Studies) and Ms Natasha Partt (University of Surrey)

PROGRAMME

DAY 1 – TUESDAY 4 JULY
Thomas Telford Building, Room 22AA04

(BST)

11.00 – 12.30	Registration in room 39AA04
12.30 – 14.30	Lunch
14.30 – 14.40	Opening
14.40 – 15.00	**Claudia's memorial talks** (Fiedler, Sandstede, Lloyd)
15.00 – 15.40	Bernold Fiedler **"Real chaos and complex time"**
15:45 - 16.25	Bjorn Sandstede (online) **"Period-doubling of spiral waves"**
16.25 – 16.55	Coffee break in room 39AA04
16.55 – 17.35	Edriss Titi (online) **"Determining the global dynamics of infinite-dimensional dissipative system by a scalar ODE – The Navier-Stokes equations paradigm"**
17.40 – 18.20	Sergey Zelik **"Determining functionals and finite dimensional reduction revisited"**
18.30 – 20.00	Welcome party

DAY 2 – WEDNESDAY 5 JULY
Thomas Telford Building, Room 22AA04

(BST)

09.40 – 10.20	Ian Melbourne **"Simulation of stochastic differential equations driven by a Lévy process"**
10.20 – 10.50	Coffee break in room 39AA04
10.50 – 11.30	Anna Kostianko **"Recent progress in the theory of inertial manifolds"**
11.35 – 12.15	Dima Turaev **"Symmetric homoclinic tangles in reversible dynamical systems have positive topological entropy"**
12.20 – 13.00	Jeroen Lamb **"Dynamics and bifurcations of set-valued systems"**
13.00 – 15.00	Lunch
15.00 – 15.40	Marcel Oliver **"A new construction of modified equations for variational integrators"**
15.45 – 16.25	George Patrick (online) **"Regularized reduction of certain particle-like relative equilibria of point vortices"**
16.25 – 19.00	Coffee break, Poster session, free time
19.00 – 22.00	Banquet in Downtown (Thai Terrace)

DAY 3 – THURSDAY 6 JULY

Thomas Telford Building, Room 22AA04

(BST)

09.40 – 10.20	David Chillingworth **"Three snapshots of SO(3)"**
10.20 – 10.50	Coffee break in room 39AA04
10.50 – 11.30	Tamara Fastovska (online) **"Asymptotic properties of solutions to transmission problems for elastic beams"**
11.35 – 12.15	Reiner Lauterbach **"The Ize conjecture for finite subgroups of SO(4)"**
12.20 – 13.00	Arnd Scheel **"Propagation into unstable state and the marginal stability conjecture"**
13.00 – 15.00	Lunch
15.00 – 15.40	Arieh Iserles **"An overarching framework for spectral methods and dispersive equations"**
15.45 – 16.25	Kristian Kristiansen **"On a tropicalization of planar polynomial ODEs with finitely many structurally stable phase portraits"**
16.25 – 16.55	Coffee break in room 39AA04
16.55 – 17.35	Polina Vytnova **"Curves of zeros of dynamical zeta functions"**

DAY 2 – FRIDAY 7 JULY

Thomas Telford Building, Room 22AA04

(BST)

09.15 – 09.55	Jens Rademacher **"Nilpotency and chaos in Allen-Cahn equations with large scale linear fields"**
10.00 – 10.40	Karsten Matthies **"Kinetic equations from deterministic particle dynamics"**
10.40 – 11.00	Coffee break in room 39AA04
11.00 – 11.40	Isabelle Schneider **"Symmetry groupoids of differential equations"**
11.45 – 12.25	Caroline Wormell **"Chaotic mixing of Cantor measures and some applications"**
12.30 – 13.10	Frank Schilder **"Scale out storage and dynamical systems"**
13.15 – 13.30	Closing
13.30 – 15.00	Goodbye Party

**FACULTY OF ENGINEERING
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