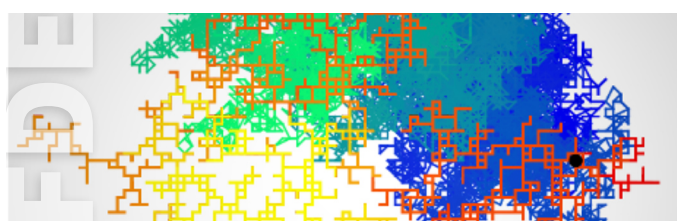# Isaac Newton Institute for Mathematical Sciences

Programmes & Workshops 2022

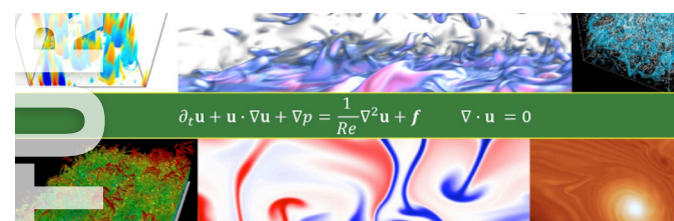## Fractional differential equations
4 January 2022 - 29 April 2022

- **W** Deterministic and stochastic fractional differential equations and jump processes
  21 - 25 February 2022
- **W** Fractional kinetics, hydrodynamic limits and fractals
  21 - 25 March 2022
- **W** Optimal control and fractional dynamics
  19 - 22 April 2022

Frontiers in kinetic theory: connecting microscopic to macroscopic scales - KineCon 2022
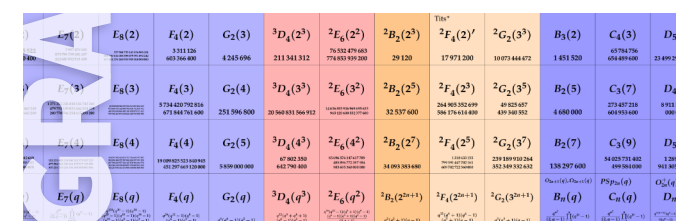4 January 2022 - 24 June 2022

- **W** Frontiers in analysis of kinetic equations
  10 - 14 January 2022
- **W** Kinetic Theory: old and new tutorial
  17 - 18 January 2022
- **W** Frontiers in kinetic equations for plasmas and collective behavior
  25 - 29 April 2022
- **W** Frontiers in the interplay between probability and kinetic theory
  23 - 25 May 2022
- **W** Frontiers in numerical analysis of kinetic equations
  20 - 24 June 2022

Mathematical aspects of turbulence: where do we stand?
4 January 2022 - 24 June 2022

- **W** Turbulence: where do we stand and where are we heading?
  4 - 7 January 2022
- **W** Rigorous analysis of incompressible fluid models and turbulence
  14 - 18 February 2022
- **W** Modelling and analysis of turbulent transport, mixing and scaling
  7 - 11 March 2022
- **W** Wall-bounded turbulence: beyond current boundaries
  28 March to 1 April 2022
- **W** Advances in geophysical and astrophysical turbulence
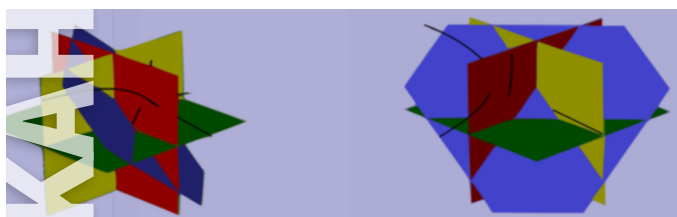 16 - 20 May 2022

Groups, representations and applications: new perspectives
3 May 2022 - 29 July 2022

- **W** Counting conjectures and beyond
  9 - 13 May 2022
- **W** Simple groups, representations and applications
  25 - 29 July 2022

K-theory, algebraic cycles and motivic homotopy theory
3 May 2022 - 29 July 2022

- **W** Algebraic K-theory, motivic cohomology and motivic homotopy theory
  13 - 17 June 2022
- **W** Arithmetic geometry, cycles, Hodge theory, regulators, periods and heights
  20 - 24 June 2022
- **W** Mathematical physics: algebraic cycles, strings and amplitudes
  19 - 22 July 2022

Verified software
4 July 2022 - 12 August 2022

- **W** From theory to practice
  4 - 8 July 2022
- **W** Tools and experiments for verified software
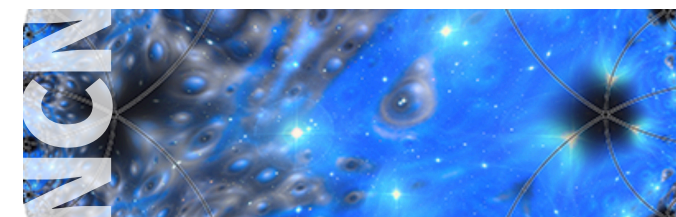 8 - 12 August 2022

Dispersive hydrodynamics: mathematics, simulation and experiments, with applications in nonlinear waves
4 July 2022 - 16 December 2022

- **W** Modulation theory and dispersive shock waves
  11 - 15 July 2022
- **W** Women in dispersive equations day
  18 - 18 July 2022
- **W** Analysis of dispersive systems
  5 - 9 September 2022
- **W** Integrable systems and applications
  12 - 16 September 2022
- **W** Statistical mechanics, integrability and dispersive hydrodynamics
  17 - 21 October 2022
- **W** Physical applications
  5 - 9 December 2022

New connections in number theory and physics
1 August 2022 - 23 September 2022

- **W** Making the bridge: Exploring new connections between number theory and physics
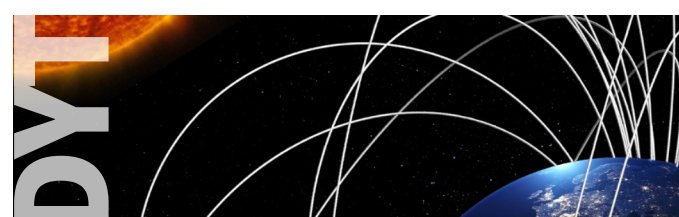 1 - 5 August 2022

Applicable resurgent asymptotics: towards a universal theory
5 September 2022 - 16 December 2022

- **W** Physical resurgence: On quantum, gauge, and stringy
  12 - 16 September 2022
- **W** Mathematics of beyond all-orders phenomena
  31 October - 4 November 2022
- **W** Study group
  12 - 16 December 2022

Frontiers in dynamo theory: from the Earth to the stars
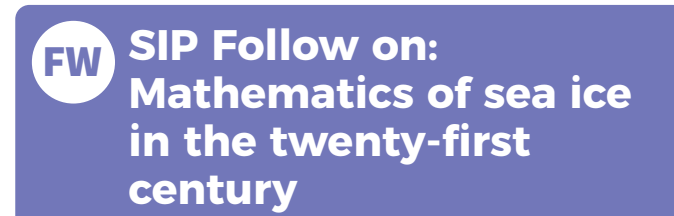12 September 2022 - 16 December 2022

- **W** Dynamos in planets in stars - similarities and differences
  12 - 16 September 2022
- **W** Fluid flow and magnetic field generation in fluids and plasmas - theory and laboratory experiments
  17 - 21 October 2022
- **W** Modeling, observing and understanding flows and magnetic fields in the Earth's core and in the Sun
  12 - 16 December 2022

- **FW** International conference on computability, complexity and randomness
  6 - 10 June 2022
- **FW** SIP Follow on: Mathematics of sea ice in the twenty-first century
  19 - 30 September 2022
- **FW** Microbial communities: current approaches and open challenges
  3 - 7 October 2022

JUNIPER

INI supports the JUNIPER Consortium
1 January 2022 - 31 December 2022

- **W** WORKSHOP
- **FW** FOLLOW-ON WORKSHOP
- **R** Rescheduled from 2020/21 due to the COVID-19 pandemic
- **C** This is the concluding half of the programme curtailed in 2020 due to the COVID-19 pandemic