

**JSPS/UK Meeting
9/10 September 2013
at the
Isaac Newton Institute for Mathematical Sciences
University of Cambridge**

TOPOLOGICAL VORTICITY DYNAMICS IN THE PHYSICAL SCIENCES

Monday 9th September

10 a.m. Coffee, Welcome, Introductions

10.30 Fukumoto, Yasuhide (Institute of Mathematics for Industry, Kyushu University)
Are all the topological invariants representable as cross-helicities?

11.00 Keith Moffatt (DAMTP, Cambridge)
Vortex and magnetic flux tube reconnection
[Joint work with Yoshifumi Kimura (Nagoya University)]

11.30 Tanda, Satoshi
(Department of Applied Physics, Hokkaido University)
Universality of real-space topology: it's the helicity

12.00 Andrew Gilbert (Exeter University)
Flows in general geometry, pull-backs, averages, dissipation, and applications.

12.30-14.00 Lunch, Wolfson Court

2 p.m. Hattori, Yuji (Institute of Fluid Science, Tohoku University)
Dynamic geometrical analysis of high-enstrophy structures in isotropic turbulence

2.30 Carlo Barenghi (Newcastle University)
Reconnections of vortex filaments and the three-dimensional reverse cascade

3.00 Tsubota, Makoto (Faculty of Science, Osaka City University)
Quantum turbulence in atomic Bose-Einstein condensates

3.30 Tea, CMS

4.00 - 4.30 John Gibbon (Imperial College)
Vorticity moments in four numerical simulations of the 3D-NS equations

4.00 - 5.30 Round Table discussion

7.00 for 7.30 Dinner, Allhusen Room, Trinity College

Tuesday 10th September

9.30 Bob Kerr (Warwick University)

Curvature and reconnection in classical and quantum fluids

10.00 Hirota, Makoto (Institute of Fluid Science, Tohoku University)

Variational approach to spectral stability criteria of inviscid flows

10.30 Darren Crowdy (Imperial College)

Techniques for topologically non-trivial planar flows and applications

11.00 Coffee CMS

11.30 Yoshida, Zensho (Graduate School of Frontier Sciences, University of Tokyo)

Relativistic helicity and link in Minkowski space-time

[co-authors: Y. Kawazura (University of Tokyo) and T. Yokoyama (Hokkaido University)]

12.00 Koji Ohkitani (Sheffield University)

Navier-Stokes equations in two and four dimensions

12.30 - 2.00 Lunch, Wolfson Court

2 p.m. David Dritschel (St Andrews University)

The stability of ageostrophic quasi-ellipsoidal vortices in a rotating, stratified fluid

2.30 - 3.30 Small subgroup discussions

3.30 Tea in CMS

4.00 - 5.00 Discussion and Conclusions: where do we go from here?

Chaired by: Yasuhide Fukumoto and Keith Moffatt