

New Themes in Plasma and Fluid Turbulence.

Programme

Tuesday May 13th 2003

MORNING SESSION: SHEAR FLOWS AND TURBULENCE

- 9:00 am **Welcome, Introduction, Meeting goals**
Professor Steve Cowley (Imperial)
- 9:25 am **“Shear sheltering mechanisms and implications for turbulence and geophysical flows”**
Professor Julian Hunt (UCL)
- 10:00 am **“Key issues in the theory of zonal flow and transport barrier dynamics”**
Professor Patrick Diamond (UCSD)
- 10:35 am *Coffee*
- 10:50 am **“Turbulence in the sun”**
Professor Douglas Gough (Cambridge)
- 11:30 am **“Kinetic measurements of shear flows and the transition to turbulence”**
Professor Greg Morfill (MaxPlanck –Garching)
- 12:00 pm **“Coherent Structures in Shear Flow”**
Dr. Tim Nickels (Cambridge)
- 12:10 pm **“Future work on singularities of the Euler equations and fast hydrodynamic vortex reconnection”**
Professor Robert Kerr, (Warwick)
- 12:20 pm **“Shear flow generation in drift wave turbulence”**
Dr. Chris Lashmore-Davies (Culham)
- 12:30 pm *Lunch*
- 1:00 pm *Posters session. Posters remain up during the remainder of the meeting.*

AFTERNOON SESSION: STRUCTURE AND TURBULENCE

- 1:20 pm **“New results on stably stratified turbulence and an enduring perspective on coherent structures”**
Professor Jim McWilliams (UCLA)
- 2:00 pm **“Integral invariants of hydrodynamic, MHD, and stratified turbulence”**
Dr. Peter Davidson (Cambridge)
- 2:30 pm **“The zeroth law of turbulence: experimental results”**
Dr. Bruce Pearson (Nottingham)
- 2:40 pm **“Anisotropic heat transport in a rotating turbulent MHD medium”**
Professor Paul Roberts (UCLA)
- 3:00 pm **“Flux separation in compressible magnetoconvection”**
Professor Michael Proctor (Cambridge)
- 3:30 pm **“Vorticity and coherent structures in dynamos”**
Dr. Steve Tobias. (Leeds)
- 4:00 pm *Tea*
- 4:10 pm **“Sandpiles and plasma phenomenology”**
Professor Richard Dendy (Culham & Warwick)
- 4:40 pm **“The origin of universal fluctuations in correlated systems: explicit calculation for an intermittent turbulent cascade”**
Prof. Sandra Chapman, (Warwick).
- 4:50 pm **“SOC vs. turbulence in space physics”**
Dr. Mervyn Freeman (BAS)
- 4:55 pm **“A multi-loop reconnection model for Solar Activity”**
Dr. Maya Paczuski (Imperial)
- 5:10 pm **“A quasi-particle description of plasma turbulence”**
Professor Bob Bingham (RAL)
- 5:20 pm **“Stochastic characterisation and modelling of complex systems”**
Dr. Keith Hopcraft (Nottingham)
- 5:50 pm *Wine and discussion*

Wednesday May 14th 2003

MORNING SESSION: FLOWS, TURBULENCE AND TRANSPORT.

Posters up all day.

- 9:00 am **“Physics of transport barriers in magnetized plasmas”**
Dr. Xavier Garbet (JET)
- 9:25 am **“Problems in predictive modelling of plasmas with transport barriers”**
Dr. V. Parail (JET)
- 9:35 am **“Jets and transport barriers in atmospheric flows”**
Professor Peter Haynes (Cambridge)
- 10:05 am **“Perspectives on shear flow in turbulence”**
Professor Paul Terry (Wisconsin)
- 10:35 am *Coffee*
- 10:45 am **“Constructing high reynolds number turbulence”**
Dr. Christos Vasilicos (Imperial).
- 11:15 am **“Scalar variance decay and backtransfer to low frequencies”**
Dr. David Thomson (Met. Office)
- 11:25 am **“Large-scale eigenfunctions and mixing”**
Dr Jean-Luc Thiffeault (Imperial)
- 11:35 am **“Transport effects in mean field dynamos”**
Professor David Hughes (Leeds)
- 12:05 am Discussion. Dr. A. Thyagaraja (Culham), chair.
- 1:00 pm *Lunch*

AFTERNOON SESSION: MAGNETIC FIELDS AND TURBULENCE.

- 1:50 pm **“Flux pumping and penumbral structure in sunspots”**
Professor Nigel Weiss (Cambridge)
- 2:30 pm **“Structures in fusion turbulence”**
Professor Bill Dorland (Maryland)
- 3:00 pm **“Fusion alpha-particle populations with strongly nonlinear phase-space evolution”**
Dr. Roderick Vann (Warwick)
- 3:05 pm **“Properties of compressible MHD turbulence in cold interstellar clouds”**
Professor Jim Stone (Cambridge)
- 3:35 pm *End of Meeting*