

## Ian Roulstone: List of Publications

### 1 Papers

- ROULSTONE, I. Twistor Functions for Infrared Maxwell Fields. *Twistor Newsletter* **25**, Oxford University. September 1987.
- ROULSTONE, I. Dirac-Bergmann Constraints and the Semi-Geostrophic Equations. *Met. O. 11 Technical Note No. 42*. March 1990.
- ROULSTONE, I. and BRICE, S.J. Generalized Hamiltonian Methods and the Semi-Geostrophic Equations. *Preprint volume to the Eighth Conference on Atmospheric and Oceanic Waves and Stability, Denver, Colorado. 14th-18th October 1991*. A.M.S. 138-140
- ROULSTONE, I. Gravity Wave Phase Speeds form the Eigenmodes of the Unified Model. *Short-Range Forecasting Research Technical Report No. 25*. July 1992.
- CULLEN, M.J.P. and ROULSTONE, I. A Geometric Model of the Nonlinear Equilibration of Two-Dimensional Eady Waves. *J. Atmos. Sci.* **50**, 328-332. February 1993.
- ROULSTONE, I. Some Notes on Primitive and Quasi-Equilibrium Equations with a Hybrid Vertical Coordinate and Remarks on Hamiltonian Structure. *Forecasting Research Technical Report No. 42*. March 1993.
- SEWELL, M.J. and ROULSTONE, I. Anatomy of the Canonical Transformation. *Phil. Trans. R. Soc. Lond.*, **A345**, 577-598, 1993.
- ROULSTONE, I. and NORBURY, J. On the Hamiltonian Structure of the Semi-Geostrophic Equations. *Geometrical Methods in Geophysical Fluid Dynamics: Proceedings of the Woods Hole Summer Programme, 1993*. W.H.O.I. Tech. Rep. WHOI-94-12. 1994.
- ROULSTONE, I. and SEWELL, M.J. On the Structure of the Canonical Transformation. *Geometrical Methods in Geophysical Fluid Dynamics: Proceedings of the Woods Hole Summer Programme, 1993*. W.H.O.I. Tech. Rep. WHOI-94-12. 1994.
- ROULSTONE, I. and NORBURY, J. A Hamiltonian Structure with Contact Geometry for the Semi-Geostrophic Equations. *J. Fluid Mech.* **272**, 211-233, August 1994.
- SEWELL, M.J. and ROULSTONE, I. Families of Lift and Contact Transformations. *Proc. R. Soc. Lond.* **A447**, 493-512. 1994.
- ROULSTONE, I. On the application of Dirac constraints to variational data assimilation methods in meteorology. *Submitted to the conference on "New asymptotic methods in geophysical flows", Isaac Newton Institute, Cambridge, December 1994*.
- ROULSTONE, I. and BRICE, S.J. On the Hamiltonian formulation of the quasi-hydrostatic equations. *Quart. J. R. Meteorol. Soc.*, **121**, 927-936, April 1995.
- ROULSTONE, I. Two examples of classical scattering off fixed sources. *Twistor Newsletter* **39**, Oxford University. May 1995.
- ROULSTONE, I. A twistor description of scattering off fixed sources. *Classical and Quantum Gravity*, **12**, 3053-3066, December 1995.
- ROULSTONE, I. and SEWELL, M.J. Potential Vorticities in Semi-Geostrophic Theory. *Quart. J. R. Meteorol. Soc.*, **122**, 983-992, April 1996.
- MCINTYRE, M.E. and ROULSTONE, I. Hamiltonian balanced models: constraints, slow manifolds and velocity splitting. *Forecasting Research Scientific Paper 41*, Met Office, U.K. This report contains tutorial material, now incorporated into McIntyre and Roulstone (2001); it also contains new results to be resubmitted to *J. Fluid Mech.* The original full

text and *Corrigenda* are archived at the web site <http://www.atm.damtp.cam.ac.uk/people/mem/> 1st September, 1996.

ROUBTSOV, V.N. and ROULSTONE, I. Examples of quaternionic and Kähler structures in hamiltonian models of nearly geostrophic flow. *J. Phys.A.: Math. Gen.*, **30**, L63-L68. 21st February, 1997.

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ROULSTONE, I., BANOS, B., GIBBON, J.D. and ROUBTSOV, V.N. 2009 A geometric interpretation of coherent structures in Navier-Stokes Flows. *Proc. R. Soc. Lond. A* **465**, 2015-21.

DELAHAIES, S. and ROULSTONE, I. 2009 Hyper-Kähler geometry and semi-geostrophic theory. *Proc. R. Soc. Lond. A* **466**, 195-211.

## 1.1 Books

NORBURY, J. and ROULSTONE, I. (Eds.) *Large-scale atmosphere-ocean dynamics: Vol. 1 Analytical methods and numerical models; Vol. 2 Geometric methods and models*. 734pp., Cambridge University Press. August 2002.