

graduate lecture material given by Andrew Majda at Princeton University and the Courant Institute over a period of years. This is the standard to which the rest of us need to aspire.

REFERENCES

- BEALE, T., KATO, T. & MAJDA, A. 1984 Remarks on the breakdown of smooth solutions of the Euler equations. *Commun. Math. Phys.* **94**, 61–66.
- BERTOZZI, A. & CONSTANTIN, P. 1993 Global regularity for vortex patches. *Commun. Math. Phys.* **152**, 19–28.
- CHEMIN, J.-Y. 1993 Persistence de structures geometriques dans les fluides incompressibles. *Ann. Ec. Norm. Supér.* **26** (4), 1–16.
- CHORIN, A. 1982 Evolution of a turbulent vortex. *Commun. Math. Phys.* **83**, 517–535.
- CONSTANTIN, P., FEFFERMAN, CH. & MAJDA, A. 1996 Geometric constraints on potential singularity formation in the three-dimensional Euler equations. *Commun. Partial Diff. Equat.* **21** (3,4), 559–571.
- CONSTANTIN, P., MAJDA, A. & TABAK, E. 1994 Formation of strong fronts in the two-dimensional quasi-geostrophic thermal active scalar. *Nonlinearity* **7**, 1495–1533.
- DELORT, J. M. 1991 Existences de nappes de tourbillon en dimension deux. *J. Am. Math. Soc.* **4**, 553–586.
- KERR, R. 1993 Evidence for a singularity of the three-dimensional incompressible Euler equations. *Phys. Fluids A* **5**, 1725–1746.
- LERAY, J. 1934 Essai sur le mouvement d'un liquide visqueux emplissant l'espace. *Acta Math.* **63**, 193–248.
- MAJDA, A. 1993 Remarks on weak solutions for vortex sheets with a distinguished sign. *Indiana Univ. Math. J.* **42**, 921–939.
- STUART J. T. 1971 Stability problems in fluids. In *Mathematical Problems in the Geophysical Sciences*, Vol. 13, pp. 139–155. Lectures in Applied Mathematics Series, Providence, Rhode Island.

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SHORT NOTICES

Tubes, Sheets and Singularities in Fluid Dynamics. Edited by K. BAJER & H. K. MOFFATT. Kluwer, 2002. 379 pp. ISBN 1402009801. £72.00.

Originating from a Symposium held in Zakopane, Poland in September 2001, this book contains forty-three papers by various authors and provides a comprehensive overview of current research into vortex dynamics. The individual contributions are rather short (typically six pages) but many of them are by leading figures in the area. The book is divided into six parts:

- (i) vortex structure, stability and evolution;
- (ii) singular vortex filaments;
- (iii) magnetic structure, topology and reconnection;
- (iv) vortex structures in turbulent flows;
- (v) finite-time singularities;
- (vi) Stokes flow and singular behaviour near boundaries.

Attractively produced by Kluwer, this book and will be of particular interest to those who are active in vortex dynamics research.