



Turbulence and Diffusion: Scaling versus Equations (Paperback)

By Oleg G. Bakunin

Springer-Verlag Berlin and Heidelberg GmbH Co. KG, Germany, 2010. Paperback. Book Condition: New. 1st ed. Softcover of orig. ed. 2008. 229 x 152 mm. Language: English . Brand New Book ***** Print on Demand *****. This book is intended to serve as an introduction to the multidisciplinary field of anomalous diffusion in complex systems such as turbulent plasma, convective rolls, zonal flow systems, stochastic magnetic fields, etc. In spite of its great importance, turbulent transport has received comparatively little treatment in published monographs. This book attempts a comprehensive description of the scaling approach to turbulent diffusion. From the methodological point of view, the book focuses on the general use of correlation estimates, quasilinear equations, and continuous time random walk approach. I provide a detailed structure of some derivations when they may be useful for more general purposes. Correlation methods are flexible tools to obtain transport scalings that give priority to the richness of ingredients in a physical problem. The mathematical description developed here is not meant to provide a set of recipes for hydrodynamical turbulence or plasma turbulence; rather, it serves to develop the reader's physical intuition and understanding of the correlation mechanisms involved.



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