

# Lecture Notes in Physics

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## *Recent Titles in Mathematical Physics*

Volume 320

**D. Coles**, California Institute of Technology, Pasadena, CA, USA  
(Ed.)

### **Perspectives in Fluid Mechanics**

Proceedings of a Symposium, Held on the Occasion of the 70th Birthday of Hans Wolfgang Liepmann, Pasadena, California, January 10–12, 1985

1988. VII, 207 pages. Hard cover DM 55,-. ISBN 3-540-50644-6

The papers in this festschrift for H. W. Liepmann reflect his wide interests in science. Contributions cover large-scale ocean turbulence, astrophysical jets, flying machines, cartoons in turbulence, transonic ideas, vortex dynamics, dynamical system theory and fluid flow, turbulence research by numerical simulation, and geologic nozzles.

Volume 319

**L. Garrido**, University of Barcelona, Spain (Ed.)

### **Far from Equilibrium Phase Transitions**

Proceedings of the Xth Sitges Conference on Statistical Mechanics, Sitges, Barcelona, Spain, June 6–10, 1988

1988. VIII, 340 pages. Hard cover DM 65,-. ISBN 3-540-50643-8

These proceedings include new results on envelope solitons, non-linear optical systems, pattern formation, Hopf bifurcation, the Sine-Gordon model, Fokker-Planck models, laser instabilities, reaction-diffusion systems, retarded feedback systems, disordered media, convection in binary mixtures, time-dependent phase transitions, dispersive optical bistability, interfacial instability, and growth kinetics.

Volume 314

**L. Peliti**, University of Naples; **A. Vulpiani**, University of Aquila, Italy (Eds.)

### **Measures of Complexity**

Proceedings of the Conference, Rome, September 30 – October 2, 1987

1988. VIII, 154 pages. Hard cover DM 55,-. ISBN 3-540-50316-1

This book addresses the problem of defining complexity by carefully analysing in what sense complexity means measure in such areas as the theory of dynamical systems, condensed matter physics, ecology, immunology and the theory of neural networks. The information content of com-plexity is studied and similarities and differences in the various concepts of complexity are highlighted.

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Volume 313

**H.-D. Doebner**, **J.D. Hennig**, TU Clausthal, FRG; **T.D. Palev**, Bulgarian Academy of Sciences, Sofia, Bulgaria (Eds.)

### **Group Theoretical Methods in Physics**

Proceedings of the XVI International Colloquium Varna, Bulgaria, June 15–20, 1987

1988. XII, 599 pages. Hard cover DM 107,-. ISBN 3-540-50245-9

The volume contains contributions dealing with concepts from classical group theory, supergroups, superalgebras, infinite dimensional groups, Kac-Moody algebras and related structures. Applications to physics include quantization methods, nuclear physics, crystallography, gauge theory and strings in particle physics.

Volume 312

**J. S. Feldman**, **T. R. Hurd**, **L. Rosen**, **J. D. Wright**

### **QED: A Proof of Renormalizability**

1988. VII, 176 pages. Hard cover DM 34,-. ISBN 3-540-50213-0

The authors give a detailed and pedagogically well written proof of the renormalizability of quantum electrodynamics in four dimensions. The proof is based on the free expansion of Gallavotti and Nicolò and is mathematically rigorous as well as impressively general.

Volume 311

**P. J. M. Bongaarts**, University of Leiden, The Netherlands; **R. Martini**, University of Twente, The Netherlands (Eds.)

### **Complex Differential Geometry and Supermanifolds in Strings and Fields**

Proceedings of the Seventh Scheveningen Conference, Scheveningen, The Netherlands, August 23–28, 1987

1988. VI, 252 pages. Hard cover DM 55,-. ISBN 3-540-50324-2

**Contents:** Supersymmetric Sigma Models and Kähler Manifolds. – Nonlinear Realizations, Kähler Manifolds and the Virasoro Manifold. – In Search of the Graded Manifold of Maps Between Graded Manifolds. – Path Integration in Superspace. – Supermanifolds, Supersymmetry and Berezin Integration. – Berezin Integration and Dimensional Reduction. – Aspects of String Theory. – Field and String Quantization in Curved Spacetimes.

Volume 308

**H. Bacry**, Marseille, France

### **Localizability and Space in Quantum Physics**

1988. VII, 81 pages. Hard cover DM 34,-. ISBN 3-540-50052-9

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