Synergetics – From Microscopic to Macroscopic Order

Proceedings of the International Symposium on Synergetics at Berlin, July 4–8, 1983

Editor: E. Frehland

With 146 Figures

Physikalische Bibliothek
Fachbereich 5
Technische Hochschule Darmstadt
Hochschulstraße 2
D-6100 Darmstadt

Springer-Verlag
Berlin Heidelberg New York Tokyo 1984

Contents

Some Introductory Remarks on Synergetics By H. Haken	1
Part I Order, Chaos, Indeterminancies	
Time Pattern Transitions in Biochemical Processes By B. Hess and M. Markus (With 6 Figures)	6
Chaotic Behaviours Observed in Homogeneous Chemical Systems By C. Vidal (With 8 Figures)	17
Wave-Number Selection in Rotating Couette-Taylor Flow By G. Ahlers and D.S. Cannell (With 3 Figures)	27
Periodic and Chaotic Patterns in Selected Quantum Optical Systems By L.M. Narducci, D.K. Bandy, J.Y. Gao, and L.A. Lugiato (With 16 Figures)	33
Chaos in Lasers By R. Graham (With 4 Figures)	47
The Falling Pencil and Superfluorescence: Macroscopic Indeterminacies After the Decay of Unstable Equilibria By F. Haake (With 5 Figures)	58
Part II Ordered Structures and Processes in Biomembranes	
On the Formation of Transient Order in Biological Membranes By E. Sackmann (With 13 Figures)	68
Generalized Moment Description of Brownian Dynamics in Biological Systems By K. Schulten, A. Brünger, W. Nadler, and Z. Schulten (With 4 Figures)	80
Nonequilibrium Current Noise Generated by Ordered Ion Transport Processes in Biological Membranes By E. Frehland (With 8 Figures)	90
The Molecular Machine of Photosynthesis—Physico-Chemical Aspects By H.T. Witt (With 3 Figures)	99
Part III Evolution of Structures	
Polynucleotide Replication and Biological Evolution By P. Schuster (With 7 Figures)	106
The Evolution Strategy. A Mathematical Model of Darwinian Evolution By I. Rechenberg (With 14 Figures)	122