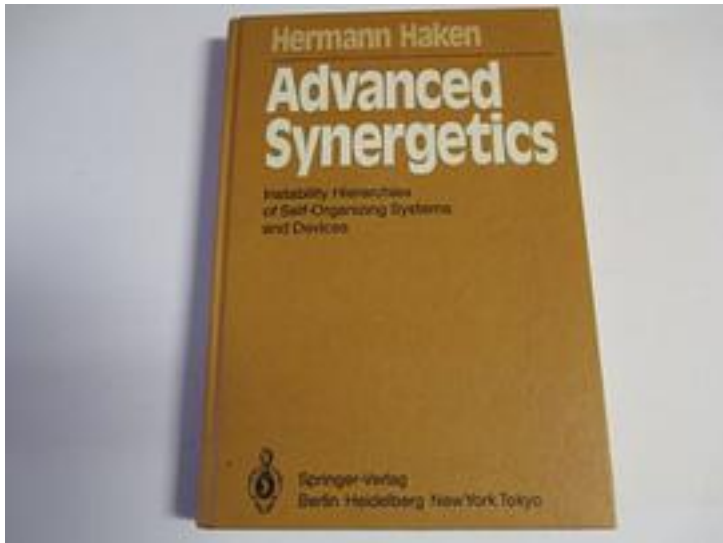


Advanced Synergetics



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This text on the interdisciplinary field of synergetics will be of interest to students and scientists in physics, chemistry, mathematics, biology, electrical, civil and mechanical engineering, and other fields. It continues the outline of basic concepts and methods presented in my book *Synergetics. An Introduction*, which has by now appeared in English, Russian, Japanese, Chinese, and German. I have written the present book in such a way that most of it can be read independently of my previous book, though occasionally some knowledge of that book might be useful. But why do these books address such a wide audience? Why are instabilities such a common feature, and what do devices and self-organizing systems have in common? Self-organizing systems acquire their structures or functions without specific interference from outside. The differentiation of cells in biology, and the process of evolution are both examples of self-organization. Devices such as the electronic oscillators used in radio transmitters, on the other hand, are man made. But we often forget that in many cases devices function by means of processes which are also based on self-organization. In an

electronic oscillator the motion of electrons becomes coherent without any coherent driving force from the outside; the device is constructed in such a way as to permit specific collective motions of the electrons. Quite evidently the dividing line between self-organizing systems and man-made devices is not at all rigid.

作者介绍:

Hermann Haken is Professor of the Institute for Theoretical Physics at the University of Stuttgart. He is known as the founder of synergetics. His research has been in nonlinear optics (in particular laser physics), solid state physics, statistical physics, and group theory. After the implementation of the first laser in 1960, Professor Haken developed his institute to an international center for laser theory. The interpretation of the laser principles as self organization of non equilibrium systems paved the way to the development of synergetics, of which Haken is recognized as the founder. Hermann Haken has been visiting professor or guest scientist in England, France, Japan, USA, Russia, and China. He is the author of some 23 textbooks and monographs that cover an impressive number of topics from laser physics to synergetics, and editor of a book series in synergetics. For his pathbreaking work and his influence on academic research, he has been awarded many-times. Among others, he is member of the Order "Pour le merite" and received the Max Planck Medal in 1990.

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