

From Newton to Mandelbrot: concepts in theoretical physics

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D. Stauffer and H. E. Stanley, *From Newton to Mandelbrot: A Primer in Theoretical Physics*, Springer-Verlag, Berlin, Heidelberg, New York, 1990, 192 pp.

The authors address this book, which includes the most important concepts in theoretical physics, to specialists in allied sciences, students in various specialities, and to all those interested in theoretical physics. In essence this is a philosophical analysis by professionals of their science, its scope, history, and current state. Theoretical physics is the first science to use a mathematical vehicle to describe its laws. This began two thousand years ago in the laws of Archimedes, but the widespread introduction of mathematics into physics began in the time of Newton. This is the reason for the name of the book, *From Newton to Mandelbrot*, that is, from Newton's mechanics to today's fractal concepts.

The book consists of five chapters devoted to individual areas of theoretical physics:

1. Mechanics

2. Electricity and magnetism

3. Quantum mechanics

4. Statistical physics

5. Fractals in theoretical physics

In its structure this is a textbook which describes the most profound concepts in theoretical physics. The authors present the general approaches of theoretical physics. The main virtue of the book is the explanation of the important results of theoretical physics using simple models. The book includes various textbook elements: clear illustrations, computer programs for the analysis of models, a list of questions on the entire course. It is significant that the concepts of theoretical physics which are examined have a modern scope. For example, scaling methods and fractal ideas are used in virtually all chapters.

The book was written with great mastery, and studying it provides true pleasure. I recommend that you become acquainted with this book.