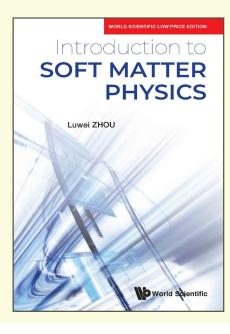




Introduction to Soft Matter Physics



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ISBN 9798886130188

Extent 352pp

Binding Paperback

Year 2024

Price Rs. 1295

ABOUT THE BOOK

Soft matters differ from hard ones essentially due to former's relatively weak interaction which is comparable to $k_{\rm B}T_{\rm rm}$ ($T_{\rm rm}$ = room temperature) — this results in the major characteristics of soft matters such as "strong reactions upon weak actions".

Developed over a period of 10 years through soft matter physics lectures for both graduate and undergraduate students in Fudan University, this textbook not only concentrates on the basic interactions inside soft matters through a reductionist approach, but also introduces the exploratory works on the complexity of soft matters in methods of system science.

Other important topics in soft matter physics which are included involve static and dynamic electrorheological (ER) effects — an important 'model animal' in the subject, granular media — which explains the thermodynamics of sands and its dynamics, and the Onsager principle of least energy dissipation rate which has been adapted in this textbook to see how it governs the optimal paths of a system's deviation from and restoration to equilibrium.

The subject of soft matter physics is still in its infancy, making it highly exciting and attractive. If you like a challenging subject, you will most certainly fall in love with soft matter physics at first read!

READERSHIP

Students at the undergraduate to graduate level who are interested in the study of soft matter physics.

CONTENTS

- Characteristics of Soft Matters
- Basic Interactions in Soft Matters
- Structures Determination of Soft Matters

- Complexity of Soft Matters
- Static Electrorheological Effect
- Dynamic of Electrorheological Effects
- Granular Systems

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