



Ladislaus Alexander Bányai

A Compendium of Solid State Theory

- Offers a compact overview of the core topics and concepts encountered in condensed matter theory
- Refreshes and reinforces the fundamental topics learned through more conventional solid state physics textbooks
- Serves as a quick look-up text for students and researchers alike

Designed to sit alongside more conventional established condensed matter physics textbooks, this compact volume offers a concise presentation of the principles of solid state theory, ideal for advanced students and researchers requiring an overview or a quick refresher on a specific topic. The book starts from the one-electron theory of solid state physics, moving through electron-electron interaction and many-body approximation schemes, to lattice oscillations and their interactions with electrons. Subsequent chapters discuss transport theory and optical properties, phase transitions and some properties of low-dimensional semiconductors. Throughout the text, mathematical proofs are often only sketched, and the final chapter of the book reviews some of the key concepts and formulae used in theoretical physics. Aimed primarily at graduate and advanced undergraduate students taking courses on condensed matter theory, the book serves as a study guide to reinforce concepts learned through conventional solid state texts. Researchers and lecturers will also find it a useful resource as a concise set of notes on fundamental topics.

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