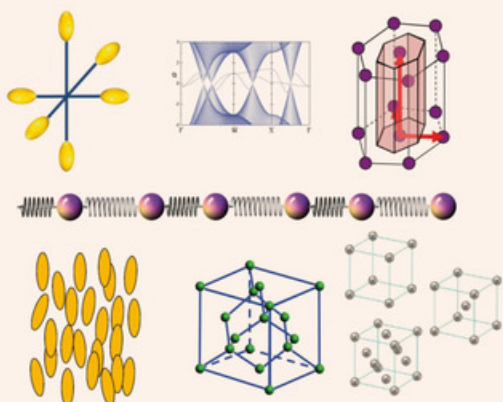


ΒΑΣΙΛΕΙΟΣ ΓΙΑΝΝΟΠΑΠΑΣ

ΠΡΟΒΛΗΜΑΤΑ ΣΤΗ ΦΥΣΙΚΗ ΤΗΣ ΣΥΜΠΥΚΝΩΜΕΝΗΣ ΥΛΗΣ II



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Abstract

The present textbook is a tutorial aid that contains solved exercises in the field of Condensed Matter Physics (CMP). It is a continuation of a previous textbook in the Kallipos Repository (<https://repository.kallipos.gr/handle/11419/1314>) and explores chapters that are not typically covered in an introductory CMP course, such as the chapters in the first book of the series. The textbook 'Problems in Condensed Matter Physics II' includes solved problems from five areas of CMP. Specifically, in the first chapter, the reader will find solved exercises on methods for calculating the electronic structure of solids, which is perhaps the most important part of CMP theory, as knowledge of the electronic structure

of materials provides the basis for computing the majority of material properties. The second chapter presents solved exercises in electron dynamics and transport phenomena in solids. The third chapter focuses on exercises related to the optical and dielectric properties of materials. The fourth chapter deals with the magnetic properties of materials, while chapter five contains exercises on the theory of superconductivity, both at the phenomenological and at microscopic levels (BCS theory). The CMP material presented in the above chapters usually corresponds to an advanced undergraduate course in Physics or Applied Sciences, or to a course in a postgraduate program in Physics or Materials Science.

