

are also covered in several chapters.

An important feature of the monograph is the systematic presentation of collective excitations in terms of response functions. Green's functions are introduced in the book's first few pages as an alternative way to describe the response of classical oscillators and, a little later, for electronic processes. An introduction to the quantum nonequilibrium Green's function technique in appendix B closes the book. Here I would have

expected a broader use of Feynman diagrams as a way of representing the processes and, in some sense, as a way of thinking. A remarkable virtue of the book is that basically all the important results for bulk semiconductors and for mesoscopic structures of different dimensionality—quantum wells, wires and dots—are presented in parallel. The majority of the widely used approximation schemes for particular problems are briefly described and discussed.

Some relatively minor shortcomings seem to have resulted from squeezing so much material into one book. For example, the attempt to compress into Chapter 3 the whole introduction to the band theory of solids seems unsuccessful, and the selection of material here looks rather random. I think it would have been more tutorial to give a list of brief but exact formulations of the main results of band theory and crystallographic concepts as well as a few references to relevant books. A few sections are overloaded with unnecessarily thorough computations.

Notwithstanding the minor criticism above, I consider this book a useful and opportune monograph. Several problems are given at the end of each chapter, making this monograph a really effective textbook. I would like to recommend it as required reading for graduate students and researchers who intend to enter semiconductor physics and technology.

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