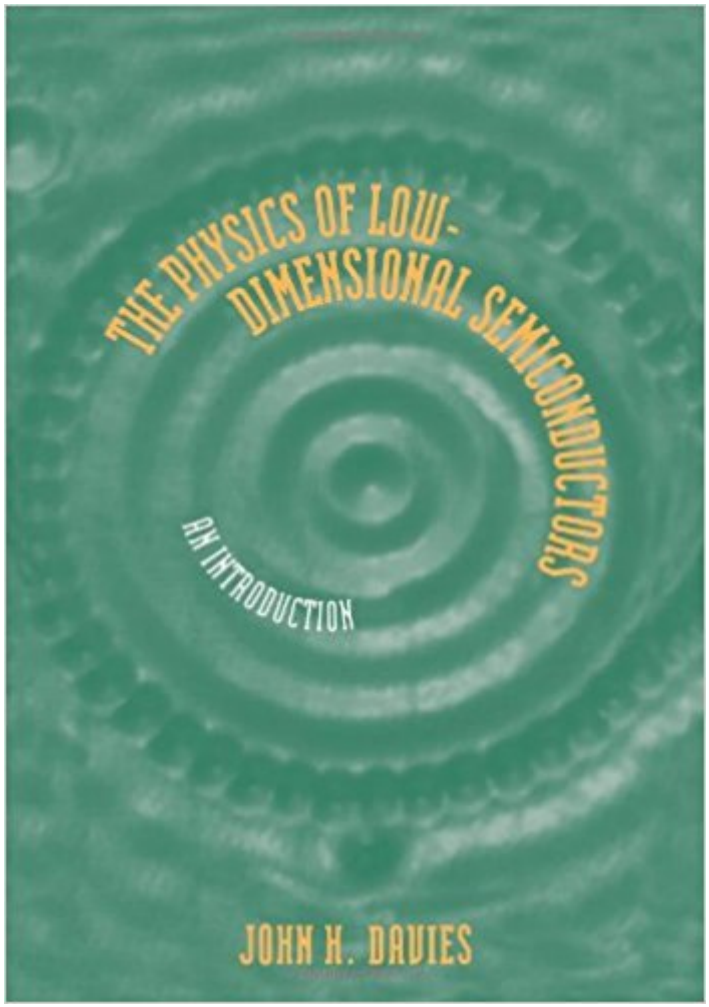
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The Physics Of Low-dimensional Semiconductors: An Introduction



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Synopsis

Low-dimensional systems have revolutionized semiconductor physics and had a tremendous impact on technology. Using simple physical explanations, with reference to examples from actual devices, this book introduces the general principles essential to low-dimensional semiconductors. The author presents a formalism that describes low-dimensional semiconductor systems, studying two key systems in detail: the two-dimensional electron gas, employed in field-effect transistors, and the quantum well, whose optical properties have multiple applications in lasers and other opto-electronic devices. The book will be invaluable to undergraduate and first-year graduate physics or electrical engineering students taking courses in low-dimensional systems or heterostructure device physics.

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Customer Reviews

Using simple physical explanations, this book introduces the general principles that underlie low-dimensional semiconductor heterostructures. The author describes the properties of two low-dimensional semiconductor systems in detail: the two-dimensional electron gas and the quantum well. The book will be invaluable to undergraduate and first-year graduate physics or electrical engineering students studying low-dimensional systems or heterostructure device physics.

The book is pretty good and very useful! What I find most exciting is that the author always explains you the phenomena physically --- not only mathematically, which helps you to have a better understanding of the physical mechanisms. I ensure you that you will have a clearly "feeling" of the

phenomena which are badly explained in other books.Each figure is well prepared, each sentence is clearly written. This is a book need to be read extensively, not roughly. This is also a great reference book since it does not struggles with too much details but only the essentials.But you'd better have learnt Quantum Mechanics and Solid State Physics before. Otherwise, you will find yourself lost. Therefore this book is NOT written for a freshman.

Used it during my graduate study when my thesis adviser recommended it. It is useful for students who want to get started, the name says "an introduction", so be prepared to move on :-) Good luck with Quantum Mechanics. PS: don't be too hard on yourself, give yourself some time while putting in consistent effort. If this book is not for you then find another one.Arrived in reasonable time and in good condition.

These guys write in a way that's *helpful*, as opposed to many other writers who simply write it to have it there, but not make the subject any clearer. I learned more from this book than from my Solid State class. They also mention practical things that are actually done in industry, which is cool.

Solid state physics is a complicated and vast subject to understand. This book covers basic concepts regarding to the solid state physics side of semiconductors, without burdening the students of too much math. Straight-forward and easy to understand.

As a graduate student working on semiconductor devices, this book is an incredible reference. Davies only assumes about an undergraduate familiarity with the subject, making the text a great "bridge" from core textbooks to research papers. There have been many occasions when, upon not understanding a paper, reading a section in this book made everything clear.

Possibly with strong background in Quantum Mechanics and Advanced Mathematics - the book is readable. Otherwise, the authors incomplete explanations make the book entirely incomprehensible.

Readable introductions to mesoscopic physics are few and far between, many being either far too simplistic and naive or too mired in formalism. Davies gives clear and lucid discussions of such topics as electron confinement in quantum wells, the integral quantum Hall effect, quantum point contacts, and MODFET's/HEMT's. Although by no means extensive and in depth, Davies does point out simplifications and refers the interested reader to relevant references for more details.

Overall, it is a balanced introduction.This book is a useful point of entry for undergraduates to low-dimensional semiconductor physics. Reading this book is good preparation for more advanced and specialized literature including: Solid State Physics vol. 44 ed. Ehrenreich and Turnbull; Perspectives in Quantum Hall Effects, Das Sarma and Pinczuk.As with any new text, there are errata but an up to date webpage of corrections is maintained by the author.

The first book you should read if you wanna do some Low Dimentional Electron Physics and only learned Solid State Physics before. It just covers all topics in this field --- with the knowledge in this book, you could read any new paper published recently.And this book's written style is very friendly --- just a textbook! So it could be finished in 2 days if you know the basic notions in Solid State Physics and concentrate on it.So there is no match for such a good introductory book --- there's no other ones like this --- I searched a lot when I tried to enter this field, and this is a good choice:)

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