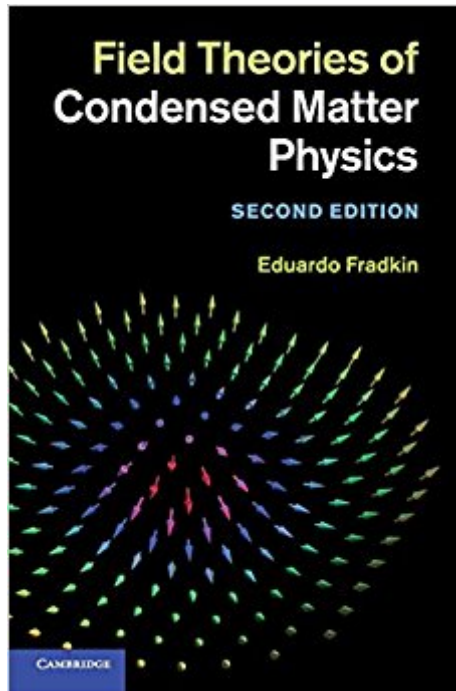




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# Field Theories Of Condensed Matter Physics



## Synopsis

Presenting the physics of the most challenging problems in condensed matter using the conceptual framework of quantum field theory, this book is of great interest to physicists in condensed matter and high energy and string theorists, as well as mathematicians. Revised and updated, this second edition features new chapters on the renormalization group, the Luttinger liquid, gauge theory, topological fluids, topological insulators and quantum entanglement. The book begins with the basic concepts and tools, developing them gradually to bring readers to the issues currently faced at the frontiers of research, such as topological phases of matter, quantum and classical critical phenomena, quantum Hall effects and superconductors. Other topics covered include one-dimensional strongly correlated systems, quantum ordered and disordered phases, topological structures in condensed matter and in field theory and fractional statistics.

## Book Information

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## Customer Reviews

Presenting the physics of the most challenging problems in condensed matter using the conceptual framework of quantum field theory, this book is of great interest to physicists in condensed matter and high energy and string theorists, as well as mathematicians. Revised and updated, this second edition features several new chapters.

Eduardo Fradkin is a Professor of Physics at the University of Illinois, Urbana-Champaign and the current Director of the Institute for Condensed Matter Theory of the University of Illinois. He received

his Licenciado (Master's) degree in Physics from the University of Buenos Aires in 1973 and his PhD in Physics from Stanford University, California in 1979. Fradkin is a condensed matter theorist, and has worked on gauge theory, frustrated and disordered systems, classical and quantum critical phenomena, strongly correlated systems, fractional quantum hall fluids and other topological phases of matter, high temperature superconductivity and quantum entanglement in quantum field theory and condensed matter.

The book is excellent and filled my expectations

This is, to my knowledge, the most comprehensive book on field theory techniques of condensed matter physics. If at a seminar you heard a concept that you never heard before, this is the textbook you would go to to find out what it is. However, after numerous attempts to follow several different chapters, I find this textbook very, very hard to follow -- at some places it is so technical as to swamp the reader into derivations without knowing where they would lead to, while at other places it is too terse, so that some crucial steps are omitted. Quite often, only when I go to the original paper, I could understand what the author had meant -- but in that case why read the book in the first place?

Among the current textbooks on qft applications in condensed matter this is most probably the best. It covers many interesting topics and I think its main focus is topological properties. There is no chapter on superconductivity which can be learned in many other textbooks and I don't think it is major con because otherwise he should have added at least 100 more pages to this book. However I should mention that in some chapters it gets very ambiguous and difficult to read and oftentimes I found it necessary to read the original papers introduced in this book.

This is the best book on the subject for self studies. Excellent build up of the physical problems. The mapping from physical intuition to mathematical formulation then naturally follows. As you work through the models and proofs, you can feel the ease with which the author uses his mathematical mastery to tackle the physical problem at hand.

The selected topics are interesting and useful for research. However, there are plenty of errors in this book, which makes it almost impossible to use any calculation detail without checking carefully. I wish avid readers of this book could make an errata by sharing their checking.

Nice book, like new!

Great book!

field theories are normally not a interesting subject but the way the author has explained it is in a fairly simple and effective to understand these a must read for all post graduate students pursuing nuclear physics

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