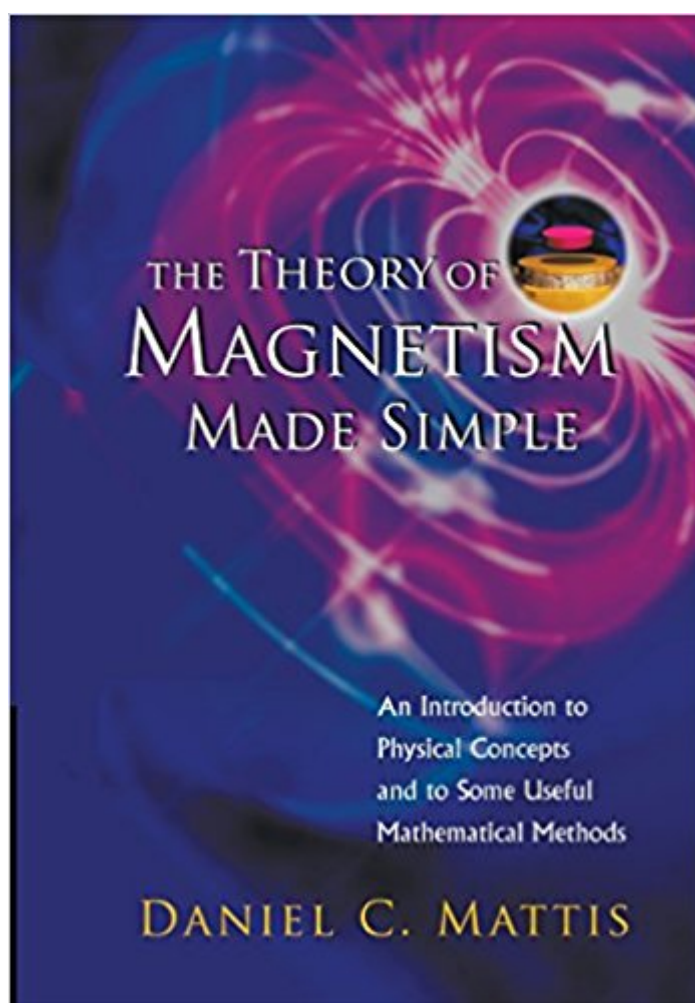The book was found

The Theory Of Magnetism Made Simple: An Introduction To Physical Concepts And To Some Useful Mathematical Methods

Synopsis

This new version of a classic updates much of the material in earlier editions, including the first chapter, on the history of the field. Important modifications reflect major discoveries of the past decades. A historical perspective is maintained throughout. The reader is drawn into the process of discovery: starting with a phenomenon, finding plausible explanations and competing theories â " and finally, the solution. The theory of magnetism is practically a metaphor for theoretical physics. The very first quantum many-body theory (Betheâ ™s ansatz) was devised for magnetic chains, just as mean-field theory was invented a century ago by Weiss to explain Curieâ ™s Law. The first two chapters of this book are immensely readable, taking us from prehistory to the â œspin valves" of the most recent past. Topics in subsequent chapters include: angular momenta and spin (Chapter 3), quantum theory of simple systems, followed by increasingly technical insights into ordered and random systems, thermal fluctuations, phase transitions, chaos and the like. Contemporary developments in nanotechnology now seek to take advantage of the electronâ ™s spin as well as of its charge. The time is not far off when nano-circuits made entirely of silicon exhibit such many-body properties as superconductivity or ferromagnetism â " without any superconducting materials or magnetic ions being present. The reader of this book will be prepared for such exotic twenty-first century applications. Daniel C Mattis, BS, MS, PhD, Fellow of the American Physical Society (APS), is a frequent lecturer at research institutions and the author of several textbooks and numerous research articles. His expertise includes many-body theory, electrical conductivity, quantum theory of magnetism and most recently, nanotechnology. Prof. Mattis is on the editorial panel for high-temperature superconductivity of the International Journal of Modern Physics B and Modern Physics Letters B, both published by World Scientific. Currently serving as Professor in the Physics department at the University of Utah in Salt Lake City, Utah, USA, at various times he has been visiting Professor at Yale University (New Haven), State University of New York (Buffalo), Temple University (Philadelphia), and served as â œWei-Lun Visiting Professor" at the Chinese University of Hong Kong. A founding member of the â œFew-Body Physics" section of the APS, he has also served as Chair of the standing committee of the! APS for the â œInternational Freedom of Scientists."

Book Information

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Customer Reviews

.,." an excellent resource for anyone working in magnetism or theoretical condensed matter physics ..."

Daniel C Mattis, BS, MS, PhD, Fellow of the American Physical Society (APS), is a frequent lecturer at research institutions and the author of several textbooks and numerous research articles. His expertise includes many-body theory, electrical conductivity, quantum theory of magnetism and most recently, nanotechnology. Prof. Mattis is on the editorial panel for high-temperature superconductivity of the International Journal of Modern Physics B and Modern Physics Letters B, both published by World Scientific. Currently serving as Professor in the Physics department at the University of Utah in Salt Lake City, Utah, USA, at various times he has been visiting Professor at Yale University (New Haven), State University of New York (Buffalo), Temple University (Philadelphia), and served as "Wei-Lun Visiting Professor" at the Chinese University of Hong Kong. A founding member of the "Few-Body Physics" section of the APS, he has also served as Chair of the standing committee of the APS for the "International Freedom of Scientists." --This text refers to an out of print or unavailable edition of this title.

The author did make the book pleasant to read. The selected materials are up-to-date and useful. The book is fairly self-contained and goes from simple concepts to advanced methods. It is perhaps most suitable for readers with some background of quantum theory and condensed matter physics and helpful for professionals who would like a quick introduction to magnetism, a subject now required for standard technologies such as magnetic memory and advanced technologies such as spintronics.

This book is a good review on this subject. In starting the book with a brief history of the magnetism, the author shows in a very soft way how important the Quantum Mechanics is to this subject. There are very good examples for each section and what there is most recent in this issue. Unfortunately, some important topics are treated in a very superficial way. As an example is the renormalization group which has an enormous application in magnetism. Despite that, this book would be a good choice to a course on introduction to magnetism.

The "made simple" part of the title is completely misleading. Its is not at all simple. Not at all at an introductry level.The chapter on angular momentum has many "trivial" mistakes. For example, he writes $J|Y) = (h\text{-}bar)m|Y)$ and calls "m the eigenvalue". But it is the "$(h\text{-}bar)m$" that is the eignevalue and not just "m".A little later he writes that he will from this point on use units in which $h\text{-}bar = 1$. O.K. But then he continue to write in h-bar all over the place.This book could use a good technical editor.And, again, it is not a "made simple" book unless you already know the material.

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