

Synopsis

The sequence of topics covered include: electrostatics; steady currents; magnetic field; electromagnetic induction; and electric and magnetic polarization in matter. Taking a nontraditional approach, students focus on fundamental questions from different frames of reference. Each chapter has figures and problems to apply concepts studied.

Book Information

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Customer Reviews

Edward Purcell shared the Nobel Prize in 1952, for his work on the discovery of Nuclear Magnetic Resonance (NMR, the basis of the politically renamed MRI). This book was written in the 1960's as part of the Sputnick induced panic which saw a great investment on the part of the US government in building up the domestic scientific educational infrastructure. Along with Reif's classic, "Statistical & Thermal Physics", this survives as a legacy of that era. Certainly, no one can contest the authority of the author. Nor can they claim that the book is out of date, as the laws of Electromagnetism have remained relatively constant. But this book is more than that, it is very well written and the clearest explanation of the phenomena of E&M, unified through the development of Maxwell's Equations, which is accessible to lower division students. For that reason it has dominated introductory honors classes in that niche for four decades. The typical inadequately prepared freshman/sophomore tends to find this book frustrating due to their lack of facility with vectors and multidimensional calculus. In fact, better prepared students will find this a perfect opportunity to develop familiarity with the application of basic vector calculus. While the book is elementary, it is rigorous. The text

begins by introducing the basic ideas of electrostatics from the discovery of Coulomb's Law to its elegant formulation by Gauss via the Divergence Theorem, developing the notion of the Electric Field and the Electric Potential function as simplifying mechanisms for applying Coulomb's Law. It then introduces the corresponding observations and principles for Magnetostatics.

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