Simple Models of Magnetism (Oxford Graduate Texts)

By Ralph Skomski

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For hundreds of years, models of magnetism have been pivotal in the understanding and advancement of science and technology, from the Earth's interpretation as a magnetic dipole to quantum mechanics, statistical physics, and modern nanotechnology. This book is the first to envision the field of magnetism in its entirety. It complements a rich literature on specific models of magnetism and provides an introduction to simple models, including some simple limits of complicated models. The book is written in an easily accessible style, with a limited amount of mathematics, and covers a wide range of quantum-mechanical, finite-temperature, micromagnetic and dynamical models. It deals not only with basic magnetic quantities, such as moment, Curie temperature, anisotropy, and coercivity, but also with modern areas such as nanomagnetism and spintronics, and with 'exotic' themes, as exemplified by the polymer analogy of magnetic phase transitions. Throughout the book, a sharp line is drawn between simple and simplistic models, and much space is devoted to discuss the merits and failures of the individual model approaches.

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Review
`This is a highly readable and thorough account of models of magnetism, particularly applied to metallic magnets, that will be of great use to graduate students and experts in the field alike. The appendices are very thorough and contain a lot of helpful information, and the panels are well used. The exercises at the end of each chapter are short and pithy and a good addition.' Stephen Blundell, University of Oxford

About the Author

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