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978-1-009-09851-9 — A Student's Guide to the Ising Model
James S. Walker
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A Student's Guide to the Ising Model

The Ising model provides a detailed mathematical description of ferromagnetism and is widely used in statistical physics and condensed matter physics. In this Student's Guide, the author demystifies the mathematical framework of the Ising model and provides students with a clear understanding of both its physical significance and how to apply it successfully in their calculations. Key topics related to the Ising model are covered, including exact solutions of both finite and infinite systems, series expansions about high and low temperatures, mean-field approximation methods, and renormalization-group calculations. The book also incorporates plots, figures, and tables to highlight the significance of the results. Designed as a supplementary resource for undergraduate and graduate students, each chapter includes a selection of exercises intended to reinforce and extend important concepts, and solutions are also available for all exercises.

James S. Walker received his Ph. D. in theoretical physics at the University of Washington. He is Emeritus Professor of Physics at Washington State University, and has held positions at the University of Pennsylvania and the Massachusetts Institute of Technology. He has taught the Ising model at both the undergraduate and graduate level and is the author of the highly successful undergraduate text *Physics* (Addison-Wesley) now in its fifth edition.

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This book owes its existence to the Three Amigos—
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This edition of *A Student's Guide to the Ising Model* is supported by solutions to all problems and Mathematica files, available via the book's website. Please visit www.cambridge.org/walker-sgim to access this extra content.

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