

"In this unique and comprehensive textbook on supersymmetry, Matteo Bertolini provides an excellent foundation for this important and beautiful subject. Striking a delicate balance between theoretical rigor and accessibility, the book is an excellent resource for both newcomers and experts alike."

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"A book like this is long overdue. Professor Bertolini's lectures on the subject are already one of the standard places students go to. A published book version would be very welcome."

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"In this book, Professor Bertolini shares his extensive knowledge and pedagogy from teaching supersymmetry at SISSA for over two decades. This book is an invaluable source of insights and essential reading for anyone delving into theoretical and phenomenological aspects of supersymmetry."

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"The book offers a remarkably pedagogical treatment covering an impressive list of topics in supersymmetry, from the basics to more advanced subjects. Highly recommended for beginners seeking a complete training in supersymmetry and supersymmetric field theories."

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"This book covers both basic and established ingredients, as well as advanced and modern topics with pristine clarity. Highly recommended as an introduction to the subject as well as a useful reference".

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**W**hat is Supersymmetry? Is it something real? If not, can it be useful in any way? This book, structured as a textbook for a one semester graduate course on supersymmetry, provides an introduction to this fascinating subject and seeks to answer these questions.

Theoretically inclined in its contents, the book can be divided into three parts. The first part introduces the supersymmetry algebra and its representations, and provides a detailed description of the superfield formalism. The second part focuses on the construction of supersymmetric field theories; it includes an overview on non-renormalization theorems, the analysis of several examples of tree-level supersymmetry breaking and a discussion of the basic structure of supersymmetric models for describing physics beyond the Standard Model. The third part discusses the quantum behavior of supersymmetric field theories, in which holomorphy and dualities play a prominent role. The reader will become familiar with topics like Seiberg duality, dynamical supersymmetry breaking (both in stable and metastable vacua), Seiberg-Witten theory, Argyres-Douglas fixed points, S-duality and more. Several exercises at the end of each chapter will allow readers to test their understanding, discuss some extensions, or prove statements from the main text.

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