Supersymmetry and String Theory
Beyond the Standard Model

The past decade has witnessed dramatic developments in the fields of experimental and theoretical particle physics and cosmology. This Second Edition is a comprehensive introduction to these recent developments and brings this self-contained textbook right up to date. Brand-new material for this edition includes the ground-breaking Higgs discovery and results of the WMAP and Planck experiments. Extensive discussion of theories of dynamical electroweak symmetry breaking, metastable supersymmetry breaking, an expanded discussion of inflation and a new chapter on the landscape, as well as a completely rewritten coda on future directions, give readers a modern perspective on this developing field. A focus on three principal areas – supersymmetry, string theory and astrophysics and cosmology – provides the structure for this book, which will be of great interest to graduates and researchers in the fields of particle theory, string theory, astrophysics and cosmology. The book contains several problems, and password-protected solutions will be available to lecturers at www.cambridge.org/9781107048386. This title, first published in 2016, has been reissued as an Open Acess publication on Cambridge Core.

Michael Dine is Professor of Physics at the University of California, Santa Cruz. He is an A. P. Sloan Foundation Fellow, a Fellow of the American Physical Society and a Fellow of the American Academy of Arts and Sciences. Prior to this, Professor Dine was a Research Associate at the Stanford Linear Accelerator Center, a long-term member of the Institute for Advanced Study and Henry Semat Professor at the City College of the City University of New York.

Reviews of the first edition

"An excellent and timely introduction to a wide range of topics concerning physics beyond the standard model, by one of the most dynamic researchers in the field. Dine has a gift for explaining difficult concepts in a transparent way. The book has wonderful insights to offer beginning graduate students and experienced researchers alike."

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"How many times did you need to find the answer to a basic question about the formalism and especially the phenomenology of general relativity, the Standard Model, its supersymmetric and grand unified extensions, and other serious models of new physics, as well as the most important experimental constraints and the realization of the key models within string theory? Dine's book will solve most of these problems for you and give you much more, namely the state-of-the-art picture of reality as seen by a leading superstring phenomenologist."

Lubos Motl, Harvard University

"This book gives a broad overview of most of the current issues in theoretical high energy physics. It introduces and discusses a wide range of topics from a pragmatic point of view. Although some of these topics are addressed in other books, this one gives a uniform and self-contained exposition of all of them. The book can be used as an excellent text in various advanced graduate courses. It is also an extremely useful reference book for researchers in the field, both for graduate students and established senior faculty. Dine's deep insights and broad perspective make this book an essential text. I am sure it will become a classic. Many physicists expect that with the advent of the LHC a revival of model building will take place. This book is the best tool kit a modern model builder will need."

Nathan Seiberg, Institute for Advanced Study, Princeton

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