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distributions; 4.2.3 Counting experiments
4.3 Measuring Parameters4.4 Conclusions; References; 5. Thoughts on a Long Voyage L. Susskind; 5.1 The Landscape; 5.2 The Hierarchy; 5.3 Linkages; 5.3.1 The strong CP problem; 5.4 Supersymmetry Breaking and the Landscape; 5.5 Black Holes at the LHC?; 6. The "Top Priority" at the LHC T. Han; 6.1 Brief Introduction; 6.2 Top Quark in The Standard Model; 6.2.1 Top-quark decay in the SM; 6.2.2 Top-quark production in the SM; 6.2.2.1. tt production via QCD; 6.2.2.2. Single top production via weak interaction; 6.2.2.3. Top quark and Higgs associated production; 6.3 New Physics in Top-Quark Decay
6.3.1 Charged current decay: BSM6.3.2 Neutral current decay: BSM; 6.4 Top Quarks in Resonant Production; 6.4.1 X tt, tb; 6.4.2 T tZ, tH, bW; 6.5 Top-Rich Events for New Physics; 6.5.1 T T pair production; 6.5.1.1. tt pure hadronic decay; 6.5.1.2. tt semi-leptonic decay; 6.5.2 Exotic top signatures; 6.6 Summary and Outlook; References; 7. LHC Discoveries Unfolded J. Lykken and M. Spiropulu; 7.1 Escape from Theory Space; 7.2 Dark Matter and Missing Energy; 7.3 Missing Energy at the LHC; 7.4 A Strategy for Early Discovery with Missing Energy; 7.5 Look-Alikes at the Moment of Discovery
7.6 Twenty Questions7.7 Spin Discrimination with 100 pb-1; 7.8 More Look-Alikes; 7.9 Simple Robust Discriminators; 7.10 Outlook; References; 8. From BCS to the LHC S. Weinberg; References; 9. Searching for Gluinos at the Tevatron and Beyond J. Alwall, M.-P. Le, M. Lisanti and J. G. Wacker; 9.1 Introduction; 9.2 Event Generation; 9.2.1 Signal; 9.2.2 Backgrounds; 9.3 Projected Reach of Searches; 9.4 Implications for the LHC; 9.5 Conclusions and Outlook; References; 10. Naturally Speaking: The Naturalness Criterion and Physics at the LHC G. F. Giudice; 10.1 Naturalness in Scientific Thought
10.2 Drowning by Numbers

Sommario/riassunto

The Large Hadron Collider (LHC), located at CERN, Geneva, Switzerland, is the world's largest and highest energy and highest intensity particle accelerator. Here is a timely book with several perspectives on the hoped-for discoveries from the LHC.This book provides an overview on the techniques that will be crucial for finding new physics at the LHC, as well as perspectives on the importance and implications of the discoveries. Among the accomplished contributors to this book are leaders and visionaries in the field of particle physics beyond the Standard Model, including two Nobel Laureates (

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