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Sommario/riassunto	This book presents the first global interpretation of measurements of jet and top quark production at the Large Hadron Collider, including a simultaneous extraction of the standard model parameters together with constraints on new physics, unbiased from the assumptions on the standard model parameters. As a long-standing problem, any hadron collider search for new physics depends on parton distribution functions, which cannot be predicted but are extracted experimentally. However, performing the extraction in the same kinematic region where physics beyond the standard model is expected to manifest causes the risk of absorbing the new physics effects into the parton

distributions. In this book, the issue is addressed by extending the standard model by effective contributions from quark contact interactions describing new physics and extracting the parton distributions and standard model parameters simultaneously with setting limits on the contact interactions. In the process, the most precise single measurement of the strong coupling constant at the LHC is performed, to date. Furthermore, the book details the first investigation of the mass renormalization scale dependence of the top quark mass, highlighting the importance of a proper scale choice for obtaining robust predictions and improving the precision of experimental analyses. The initial chapters provide the reader with a succinct yet accessible introduction to the relevant theoretical and experimental topics. The presented investigations are at the edge of precision in the phenomenology of high-energy physics and serve to pave the road toward a global interpretation of LHC data. .