Special Issue

Strong QCD and Hadron Structure

Message from the Guest Editors

Parton distribution functions (DFs) are a renowned source of hadron structure information. Moreover, experiments, interpretable in terms of hadron DFs, have been a high priority for more than fifty years. For much of this time, DFs were inferred from global fits to data and viewed as benchmarks. Such fitting remains crucial, providing input for the conduct of numerous experiments worldwide. However, the past decade has witnessed the dawn of a new era in theory, with continuum and lattice studies of QCD beginning to yield robust DF predictions. These developments expose conflicts with fitting results, and such disagreements encourage one of the following conclusions: global fit outcomes are misconstrued; not all considered data are a true expression of intrinsic hadron qualities; or QCD, as currently understood, is not the theory of strong interactions. This volume will provide a modern perspective on DFs—experiment, phenomenology, and theory. It will canvass an array of experiments and new ways to make advancements in phenomenology and theory, so that the emerging controversies can be swiftly resolved and a coherent description of hadron structure can be developed.

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