HADRONS AND QUARK–GLUON PLASMA

Before matter as we know it emerged, the universe was filled with the primordial state of hadronic matter called quark–gluon plasma. This hot soup of quarks and gluons is effectively an inescapable consequence of our current knowledge about the fundamental hadronic interactions: quantum chromodynamics. This book covers the ongoing search to verify the prediction experimentally and discusses the physical properties of this novel form of matter. It provides an accessible introduction to the recent developments in this interdisciplinary field, covering the basics as well as more advanced material. It begins with an overview of the subject, followed by discussion of experimental methods and results. The second half of the book covers hadronic matter in confined and deconfined form, and strangeness as a signature of the quark–gluon phase. A firm background in quantum mechanics, special relativity, and statistical physics is assumed, as well as some familiarity with particle and nuclear physics. However, the essential introductory elements from these fields are presented as needed.

This text is suitable as an introduction for graduate students, as well as providing a valuable reference for researchers already working in this and related fields. This title, first published in 2002, has been reissued as an Open Access publication on Cambridge Core.

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