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Abstract

Current studies on heavy hadrons in nuclear medium are reviewed with a summary of the basic theoretical concepts of QCD, namely chiral symmetry, heavy quark spin symmetry, and the effective Lagrangian approach. The nuclear matter is an interesting place to study the properties of heavy hadrons from many different points of view. We emphasize the importance of the following topics: (i) charm/bottom hadron-nucleon interaction, (ii) structure of charm/bottom nuclei, and (iii) QCD vacuum properties and hadron modifications in nuclear medium. We pick up three different groups of heavy hadrons, quarkonia (J/ψ , Υ), heavy-light mesons (D/\bar{D} , \bar{B}/B) and heavy baryons (Λ_c , Λ_b). The modifications of those hadrons in nuclear matter provide us with important information to investigate the essential properties of heavy hadrons. We also give the discussions about the heavy hadrons, not only in infinite nuclear matter, but also in finite-size atomic nuclei with finite baryon numbers, to serve future experiments.

Keywords: heavy hadron, nuclear matter, chiral symmetry, heavy quark symmetry

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