

Abstract

In this thesis, we study the mass spectra and decay properties of heavy quarkonia, doubly heavy baryons, exotic states and open flavor mesons using different approaches. For heavy quarkonia, we employ Cornell potential and the ground state energy is obtained by solving the Schrödinger equation numerically. Using the potential parameters and numerical solution of wave-function, we study the decay properties of charmonia, bottomonia and B_c mesons. The computation of excited state masses and decay properties are then performed without additional parameters. For doubly heavy baryons, we employ the relativistic harmonic confinement potential and ground state energy is obtained using the non-relativistic reduction of Dirac equation. The exotic states are investigated using the modified Woods-Saxon potential by solving the Schrödinger equation numerically. We also compute the leptonic and semileptonic branching fractions of D and D_s mesons in Covariant Confined Quark Model based on the effective field theory formalism.