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S-wave Doubly Heavy Flavored Baryon Mass Spectra Using a Potential Model Incorporating Screening and O(1/m) Corrections.

S-wave mass spectra of Ξ_{cc}^{++} baryon is determined by utilizing a non-relativistic potential model. In this analysis, Ξ_{cc}^{++} is considered as a bound state of cc diquark and a u quark. The central potential considered in this work is a short-range one-gluon coulomb-like potential and a screened confinement potential in the long-range along with the O(1/m) correction terms predicted from pNRQCD and lattice studies. The non-relativistic Schrodinger equation is solved numerically for the diquark-quark system, and the masses of ground and radially excited states are evaluated. The mass of the ground state Ξ_{cc}^{++} baryon obtained from our analysis is 3621 MeV which agrees well with the experimental value 3621.6 ± 0.4 MeV.

Track type

Flavour Physics

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