

Regge trajectories in (n, M^2) and (J, M^2) planes for higher excited states for Λ_b^0 baryon

We computed excited state masses of singly heavy Λ_b^0 baryon in the framework of Hypercentral Constituent Quark Model. We use hyper coulomb plus power potential, varying (ν) from S.R.(1/2) to quadratic(2.0), in the calculation of ground and radial excited state masses. After that, orbital excited states are also determine for linear($\nu=1.0$) potential. We also introduced first order correction to the potential. The ground state $\Lambda_b(5619)^0$ and two orbital excited states $\Lambda_b(5912)^0$ and $\Lambda_b(5920)^0$ are found experimentally and our obtained masses for these states are $m_{\Lambda_b^0}(1/2^+) = 5620$, $m_{\Lambda_b^0}(1/2^-) = 5992$ MeV and $m_{\Lambda_b^0}(3/2^-) = 5980$ MeV reasonably close to them. We also compare our results with other theoretical models and they are in good agreement. From this, we also plot Regge trajectories in (n, M^2) and (J, M^2) planes for higher excited states.

Preferred Track

Open Heavy Flavors

Collaboration

Not applicable

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