

Baryon masses estimate in heavy flavor QCD

We apply the renormalization group procedure for effective particles (RGPEP) to the eigenvalue problem in QCD for only heavy quarks. We derive the effective Hamiltonian that acts on the Fock space by solving the RGPEP equation up to second order in powers of the coupling constant. The eigenstates that contain three quarks and two or more gluons are eliminated by inserting a gluon-mass term in the component with one gluon.

We estimate masses for bbb and ccc states and find that the results match estimates obtained in lattice QCD and in quark models.

Masses of ccb and bbc states are also estimated and discussed.

References:

Approximate Hamiltonian for baryons in heavy-flavor QCD

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