Lattice2010



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The qbar - q potential from Bethe - Salpeter amplitudes on lattice

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The hadron spectroscopy for mesons including heavy quarks has been continuously studied. Various models with the use of non-relativistic framework for QCD (NRQCD) are applied to the studies of the heavy quark bound systems.

The potentials between anti-quarks and quarks are the most important ingredients in models from NRQCD. So far, the static 'Qbar-Q' potential with relativistic corrections have been studied using Wilson loop in lattice QCD.

The static potential reveals that the Qbar-Q potential contains confinement and Coulomb potentials, where the finite mass effects have been included through perturbative expansion in $1/m_Q$.

In this study, we investigate the 'qbar-q' potentials with finite quark masses in quenched lattice QCD simulation.

In order to derive the qbar-q potentials,

we have utilized the method which has been recently developed by HAL QCD collaboration.

In this method, we measure the Bethe-Salpeter amplitudes in qbar-q system,

and the potentials are derived from the amplitudes through the effective Schroedinger equation.

We present our results of qbar-q potentials in $J^{P}=0^{-,1^{-}}$ channel.

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talk

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