

Parallel talk

Axial charges of $N(1535)$ and $N(1650)$ in two-flavor lattice QCD

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摘要

We show the lattice QCD results on the axial charge $g_A^{N^*N^*}$ of negative parity nucleon resonances, $N^*(1535)$ and $N^*(1650)$, which are key clues to the chiral structure in baryon sector. The measurements are performed with up and down dynamical quarks employing the renormalization-group improved gauge action at $\beta=1.95$ and the $O(a)$ improved clover quark action with the hopping parameters, $\kappa=0.1375, 0.1390$ and 0.1400 . In order to properly separate signals of $N^*(1535)$ and $N^*(1650)$, we construct 2×2 correlation matrices and diagonalize them. Wraparound contributions in the correlator, which can be another source of signal contaminations, are eliminated by imposing the Dirichlet boundary condition in the temporal direction. We find that the axial charge of $N^*(1535)$ takes small values as $g_A^{N^*N^*} \sim O(0.1)$, whereas that of $N^*(1650)$ is about 0.5, which is found independent of quark masses and consistent with the predictions by the naive nonrelativistic quark model.

关键词 [axial charge, chiral symmetry, negative parity nucleon](#)

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