Coupled channel baryon-baryon interactions on the lattice

Kenji Sasaki (for HAL QCD Collaboration)

Center for Computational Sciences, University of Tsukuba, JAPAN

The baryon-baryon interactions with strangeness $S = -2$ with the flavor SU(3) breaking are calculated by using the HAL QCD method extended to coupled channel system in lattice QCD [1]. The potential matrices are extracted from the Nambu-Bethe-Salpeter wave functions obtained by the $2 + 1$ flavor gauge configurations [2]. The spatial structures of the potential matrix in the baryon basis and in the SU(3) basis are investigated. By using the coupled channel potential, we are going to present some scattering observables of baryon-baryon scatterings.

[1] S. Aoki *et al.* [HAL QCD Collaboration], Proc. Jpn. Acad., Ser. B, **87** (2011) 509 [arXiv:1106.2281 [hep-lat]].

[2] K. Sasaki *et al.* [HAL QCD Collaboration] arXiv:1504.01717 [hep-lat].