

Ab initio approach to light nuclear systems based on quantum chromodynamics

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目的 (1) Comprehensive study of generalized baryon-baryon (BB) interaction including strangeness. (2) Physical point lattice QCD calculations for the systems with implementing an efficient numerical algorithm. (3) It's application to light hypernuclear systems.

内容 (1) Lattice QCD measurements are performed by using supercomputers with implementing the efficient algorithm. (2) Few-body problems of light (hyper-)nuclear systems are solved by using stochastic variational method.

結果 (1) Hyperon nucleon potentials at almost physical point with strangeness $S=-1$ are obtained. (2) Strong tensor force is found in off-diagonal part between Lambda-N and Sigma-N channels

[1] H. Nemura CPC207 91 (2016). arXiv:1510.

[2] H. Nemura arXiv:1810.04046 [hep-lat].

Tensor potential between Lambda-N and Sigma-N (left) and Tensor potential in diagonal Lambda-N (right) computed from almost physical point lattice QCD.

