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Lambda_c-N interaction from lattice QCD

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Lambda_c (2286), the lightest baryon that contains
one charm quark, has been found at some experiments,
but its detailed properties such as the strength of the interaction
with the nucleon, including a possibility of forming
a deuteron-like bound state, are not known.
Due to the heavy quark symmetry, heavy baryons such as
Lambda_c (2286) sometimes show quite different behavior
from light baryons, so the direct study of heavy baryons in QCD
is important to reveal their properties.

Recently, a new approach to investigate hadron interactions
in lattice QCD has been proposed and developed extensively
by the HAL QCD Collaboration. Employing this method,
we have investigated the interaction between Lambda_c and
nucleon (N). We first calculate the (single channel) potential
between Lambda_c-N, with which we investigate an existence
of the bound state in this system. We then consider
the coupled channel potentials between Lambda_c-N and
Sigma_c-N, in order to see effects from inelastic states
to Lambda_c-N interactions.

In this talk, we present the current status of our research project on
Lambda_c-N interactions as well as future prospects.

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