

# Anti-D meson and nucleon interaction: from exotic hadrons to charm nuclei

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We discuss the interaction between an anti-D meson and a nucleon, which has recently been studied in LHCb experiments, by considering the meson-exchange potential model. Applying the framework of the heavy-hadron effective theory respecting both chiral symmetry and heavy-quark spin symmetry, we build the potential model by the light-meson exchanging between an anti-D meson and a nucleon. In addition to the pion, rho and omega mesons considered in our past works, we newly include the sigma mesons as a middle-distance force for more quantitative study. The model parameters are chosen with a reference to the phenomenological nucleon-nucleon potential, i.e. the Bonn potential. Solving the Schrodinger equation, we find that there can be bound and resonant states. We also discuss the bottom version, B-meson and nucleon systems. Those systems include five quarks at least, and they should be helpful to understanding the structure of exotic hadrons. We furthermore discuss the possible link to the charm or bottom nuclei, where an anti-D or a B meson can be stably bound in atomic nuclei, and present some perspectives for future studies.

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