Light hypernuclei based on chiral interactions at next-to-leading order

Andreas Nogga[(a)], Johann Haidenbauer[(a)], Ulf-G. Meißner[(a,b)]

[(a)] Forschungszentrum Jülich, Institute for Advanced Simulation (IAS-4), Institut für Kernphysik (IKP-3), and Jülich Center for Hadron Physics, D-52425 Jülich, Germany
[(b)] Helmholtz Institut für Strahlen- und Kernphysik and Bethe Center for Theoretical Physics, Universität Bonn, D-53115 Bonn, Germany

We present predictions for the binding energies of the light hypernuclei ${}^{3}_{\Lambda}$H, ${}^{4}_{\Lambda}$He and ${}^{4}_{\Lambda}$H based on Faddeev- and Yakubovsky equations in momentum space as described in [1]. We discuss how such results can help to test the existing hyperon-nucleon (YN) potential models and effective field theory based YN interactions. Especially, we show results for the chiral interactions at next-to-leading order [2].

[1] A. Nogga, H. Kamada, and W. Glöckle, "The hypernuclei ${}^{4}_{\Lambda}$He and ${}^{4}_{\Lambda}$H: Challenges for modern hyperon nucleon forces," *Phys. Rev. Lett.* **88** (2002) 172501, `arXiv:nucl-th/0112060`.

[2] J. Haidenbauer, S. Petschauer, N. Kaiser, U.-G. Meißner, A. Nogga, *et al.*, "Hyperon-nucleon interaction at next-to-leading order in chiral effective field theory," `arXiv:1304.5339 [nucl-th]`.

E-mail: a.nogga@fz-juelich.de