

Studying light hypernuclei based on chiral interactions

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Chiral interactions provide a systematic approach to baryonic interactions resulting in a high accuracy description of NN and YN interactions [1,2]. For a similar description of many-baryon systems at least 3BFs are necessary which can be consistently obtained using chiral effective field theory. In this contribution, I report on our recent progress to further constrain these interactions based on reliable results for light hypernuclei up to $A = 8$.

We use the hypernuclei data to determine the charge-symmetry breaking (CSB) of YN interactions and for exploring the results using and isospin multiplets of hypernuclei [3,4].

We then employ the results of different chiral orders to reliably estimate the theoretical uncertainty [5]. Finally, we use the separation energies of light hypernuclei to pin down the leading chiral YNN interaction [6].

[1] J.Haidenbauer, U.G.Meißner and A.Nogga, Eur. Phys. J. A 56 (2020) no.3, 91 [arXiv:1906.11681 [nucl-th]].

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[3] J.Haidenbauer, U.G.Meißner and A.Nogga, Few Body Syst. 62 (2021), 105 [arXiv:2107.01134 [nucl-th]].

✉[4] H.Le, J.Haidenbauer, U.G.Meißner and A.Nogga, Phys. Rev. C 107 (2023), 024002 [arXiv:2210.03387 [nucl-th]].

✉[5] H.Le, J.Haidenbauer, U.G.Meißner and A.Nogga, Eur. Phys. J. A 60 (2024), 3 [arXiv:2308.01756 [nucl-th]].

[6] H.Le, J.Haidenbauer, U.G.Meißner and A.Nogga [arXiv:2409.18577 [nucl-th]].

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