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Light single- and double-lambda hypernuclei in pionless effective field theory

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We present the first comprehensive study of pionless effective field theory to A$\leq$6 single and double Λ hypernuclei.
The theory, which is fitted entirely from available experimental data, solves the longstanding overbinding problem of the $^{5}_{\Lambda}$He hypernucleus and allows to predict the existence of bound states in single- and double-Λ neutral Hypernuclei still under debate.
The renormalizability of the theory is also analyzed and the difficulties that this introduces in the computational calculations are discussed together with the possible extensions of the method.

With a limited amount of experimental data available, the extension of nuclear physics to the strange sector can be hardly done using the same techniques employed for standard nuclei.
Pionless effective field theory revealed to be a very successful approach due to the small number of parameters to be determined and the good theoretical accuracy (of the order of 10% of binding energies), which is enhanced by the large breaking scale and the small momentum of the lambda particles.

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