

Machine learning light hypernuclei

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We employ a feed-forward artificial neural network (ANN) to extrapolate, at large model spaces, the hypernuclear No-Core Shell Model results of Refs. Few-Body Syst, 55 (2014) 857 and Few-Body Syst. 62 (2021) 94 for the Λ separation energies of the lightest hypernuclei, ${}^3_{\Lambda}\text{H}$, ${}^4_{\Lambda}\text{H}$ and ${}^4_{\Lambda}\text{He}$, obtained with chiral nucleon-nucleon and hyperon-nucleon potentials.

We find that an ANN with a single hidden layer of eight neurons is sufficient to extrapolate correctly the Λ separation energies of the three hypernuclei considered. This is in agreement with the universal approximation theorem which assures that any continuous function can be realized by a network with just one hidden layer.

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