

Abstract Submitted
for the DNP20 Meeting of
The American Physical Society

Extrapolation of ${}^6\text{Li}$ ground state properties via Artificial Neural Networks¹ MATTHEW LOCKNER, JAMES VARY, PIETER MARIS, Iowa State University — We explore the use of feed-forward neural networks in extrapolating nuclear observables in light nuclei based on existing ab initio no-core shell model (NCSM) calculations. This work extends the approach and the applications of A. Negoita, et al., Phys. Rev. C 99, 054308 (2019). A large ensemble of neural networks is trained using NCSM results, and those networks are ranked by a criterion of performance. Those passing the criterion are then queried for a prediction at a large-model space limit; the distribution of predictions is found to be approximately Gaussian. Further, the width of the Gaussian is found to narrow either with more training data at fixed model space size or with increase of the model space size. We consider several properties of the ground state of Lithium-6, and we compare results with established extrapolation methods where available.

¹Supported by US DOE under Award Nos. DE-FG02-87ER40371 and DE-SC0018223 (SciDAC-4/NUCLEI). Computational resources provided by NERSC (US DOE Contract No. DE-AC02-05CH11231)

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Date submitted: 27 Jun 2020

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