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Extrapolation to infinite model space of no-core shell model results using machine learning

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A machine learning approach to extrapolation of the ab initio no-core shell model (NCSM) [1] results to the infinite model space has been suggested in Ref. [2]. We modified this approach in Refs. [3,4] and proposed training an ensemble of artificial neural networks (ANN) with different topology and formulated selection rules both for the NCSM results used for the training and for the trained ANNs. Our approach was tested in Refs. [3,4] in extrapolations of energies and rms radii of light nuclei. Here we apply this modified extrapolation approach to calculations of quadrupole moments and probabilities of E2 transitions in 10Be and 10C nuclei based on the NCSM calculations [5] with NN interaction Daejeon16 [6] in model spaces up to many body excitation quanta Nmax=12.

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Primary authors: MAZUR, Aleksandr (Pacific National University, Khabarovsk, Russia); SHIROKOV, Andrey (Skobeltsyn Institute of Nuclear Physics, Lomonosov Moscow State University, Moscow 119991, Russia); LI, He (Institute of Modern Physics, Chinese Academy of Sciences, Lanzhou, China); VARY, James P. (Department of Physics and Astronomy, Iowa State University, Ames, IA, USA); YIN, Peng (College of Physics and Engineering, Henan University of Science and Technology, Luoyang, China); SHARYPOV, Roman (Pacific National University, Khabarovsk, Russia)

Presenter: MAZUR, Aleksandr (Pacific National University, Khabarovsk, Russia)

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