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Variational Hybrid Algorithms for Nuclear Shell Model Simulations

Wednesday 10 July 2024 15:40 (20 minutes)

There is an increasing interest to develop quantum circuits capable of performing many-body quantum simulation motivated by their scaling advantages against classical devices. We present an analysis of the performance of various *Variational Quantum Eigensolvers* methods for several p-shell nuclei in the shell model framework. In particular, our work is focused on the construction of efficient *Unitary Coupled Cluster ansatzë* variations, with special interest in comparing their performance with the *ADAPT* method. We are able to simulate p-shell nuclei using these variational methods and benchmark the resources needed for convergence.

session

I. Nuclear Structure and Reactions

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