Contribution ID: **7** Type: **not specified**

Quantum simulation of the Nucleon-Nucleon potential

Friday, 1 July 2022 11:50 (20 minutes)

In this project we plan to explore the possibility to use a QC as a coprocessor for the study of the nucleon-nucleon interaction. The spin-dependent part of the nucleon-nucleon potential has matrix elements among the four possible spin-states of the two nucleons, so it can be associated and time-evolved in a two-qbit state. We plan to study the effectiveness of this approach, using already developed simulation algorithms, focusing with special interest on the development and test of a mixed-mode classical-quantum global simulation package.

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