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(I) Valence-bond modular quantum circuits for quantum chemistry

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Quantum chemistry has been identified as one of the prime applications for quantum computers. At present, the majority of quantum algorithm developments have the Noisy Intermediate Scale Quantum (NISQ) architecture in mind, for which it is important to design quantum circuits with low circuit depth to minimize noise and error propagation. In this presentation, I will present a modular circuit which allows for short circuit depths while allowing for a quantum chemical interpretation in terms of resonating valence bond structures. I will discuss applications in small molecular systems. Joint work with Ehsan Ghasempouri and Gerhard Dueck.

Keyword-1

quantum chemistry

Keyword-2

time-dependence

Keyword-3

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