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Exploring lattice supersymmetry with variational quantum deflation

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Lattice studies of spontaneous supersymmetry breaking suffer from a sign problem that in principle can be evaded through novel methods enabled by quantum computing. I will present ongoing work exploring ways quantum computing could be used to study spontaneous supersymmetry breaking in lower-dimensional lattice systems including the $(1+1)d$ $N=1$ Wess–Zumino model. A particularly promising recent development is to apply the variational quantum deflation algorithm, which generalizes the variational quantum eigensolver so as to resolve multiple low-energy states.

Topical area

Quantum Computing and Quantum Information

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