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Simulating the lattice $SU(2)$ Hamiltonian with discrete manifolds

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Numerical simulations of quantum Hamiltonians can be done representing the degrees of freedom as matrices acting on a truncated Hilbert space. Here we present a formulation for the lattice $SU(2)$ gauge theory in the so called "magnetic basis", where the gauge links are unitary and diagonal. The latter are obtained from a direct discretization of the group manifold, while the canonical momenta are built using an orthogonal transform on S_3. We discuss general considerations on the contraints of the spectrum of the free theory and the continuum manifold limit.

Topical area

Quantum Computing and Quantum Information

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