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# Simulating Meson Scattering in (1+1)D $\mathbb{Z}_2$ Lattice Gauge Theory: Efficient Operator Construction and Quantum Circuit Implementation

Scattering processes in gauge theories are fundamental to high-energy physics but remain challenging for classical simulations due to the sign problem and entanglement growth in real-time dynamics. Quantum computing offers a promising alternative for simulating such processes.

In this work, we study meson scattering in a (1+1)-dimensional \protect $\mathbb{Z}_2$ lattice gauge theor

Furthermore, we propose an efficient quantum circuit decomposition for meson wave packet preparation based

## Secondary track

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