



Contribution ID: 243

Type: Oral Presentation

Real time evolution and a traveling excitation in $SU(2)$ pure gauge theory on a quantum computer.

Tuesday, August 9, 2022 4:30 PM (20 minutes)

The Hamiltonian approach can be used successfully to study the real time evolution of a non-Abelian lattice gauge theory on the available noisy quantum computers. In this talk, results from the real time evolution of $SU(2)$ pure gauge theory on IBM hardware are presented. The long real time evolution spanning dozens of Trotter steps with hundreds of CNOT gates and the observation of a traveling excitation on the lattice were made possible by using a comprehensive set of error mitigation techniques. Self-mitigation is our novel tool, which consists of using the same physics circuit as a noise-mitigation circuit.

Primary author: MENDICELLI, Emanuele (York University)

Co-authors: POWELL, Sarah (York University); Prof. LEWIS, Randy (York University); A RAHMAN, Sarmed (York University)

Presenter: MENDICELLI, Emanuele (York University)

Session Classification: Algorithms

Track Classification: Algorithms (including Machine Learning, Quantum Computing, Tensor Networks)