Contribution ID: **614** Type: **Poster**

F7: Strategies for Quantum-Accelerated Interpolator Construction in Classical Simulations of Lattice Field Theories

Wednesday, 28 July 2021 15:45 (15 minutes)

Interpolator constructions are a requisite tool for calculations in lattice quantum field theory. Better interpolating constructions lead to ground state dominance at earlier times, and thus less noise, making computations cheaper computationally. Various classical-computing methods exist to optimize interpolator constructions. In this work, we show that optimal interpolator constructions can be determined in a small-scale quantum simulation. We use a small-scale quantum Hamiltonian simulation of the Schwinger model to variationally optimize an interpolator construction for a vector meson state in the theory, and then employ that construction in a classical path-integral Monte-Carlo calculation, where systematically improvable continuum-limit scaling is possible.

Primary authors: AVKHADIEV, Artur (MIT); Prof. SHANAHAN, Phiala (Massachusetts Institute of Technology); YOUNG, Ross

Presenter: AVKHADIEV, Artur (MIT)

Session Classification: Poster

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