Contribution ID: **393**   Type: **Oral Presentation**

Improving Quantum Simulations towards lattice SU(3)

Tuesday 9 August 2022 17:10 (20 minutes)

Quantum simulations of QCD require digitization of the infinite-dimensional gluon field. Schemes for doing this with the minimum amount of qubits are desirable. A practical digitization for SU(3) gauge theories via its discrete subgroup S(1080) has been shown to allow classical simulations down to a=0.08 fm and reproduce thermal and glueball spectrum using modified and improved actions. Together with primitive gates and improved Hamiltonians for non-abelian gauge theories, the time is approaching where more realistic quantum resource estimates will become possible.

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Session Classification: Algorithms

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