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Abstract for an Invited Paper
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Quantum Algorithms for Lattice Gauge Theories

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A beautiful description of natures fundamental forces has been devised through gauge fields introducing local symmetries or conserved charges. Though classical techniques continue to provide invaluable information on the emergent properties of gauge field theories relevant to experimental programs throughout the scientific domains, some experimentally relevant parameter regimes e.g., where coherent dynamics demand exponentially large Hilbert spaces, remain beyond current or foreseeable computational capabilities. While leveraging quantum architectures directly within a computational framework is expected to explore such parameter regimes more naturally, the inefficient utilization of Hilbert space in the presence of local symmetries demands careful considerations in the presence of quantum noise. During this talk, we will discuss current strategies and perspectives for representing quantum fields, from scalars to SU(3) Yang-Mills, on qubit degrees of freedom and controllably performing subsequent dynamical evolutions.