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Hamiltonian evolution of the dynamics of QCD-inspired field theory models

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In this project, we plan to study the dynamics of simple field theoretic models, that can be studied with available QC systems, and are inspired by Quantum Chromodynamics. One can study the dynamics of simple non-abelian gauge theories, that retains significant conceptual similarity with the more complex SU(2) and SU(3) gauge theory. One can explore the dynamics and measure observables of e.g. the D4 gauge group or of the 120-element icosahedral group on small 2D (and eventually 3D) lattice grids, assessing the complexity of the relevant quantum codes, verifying the algorithms through emulation and finally quantifying reliability on actual QC systems.

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