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D_n Lattice Gauge Theory on the Quantum Annealer

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Using D-Wave's quantum annealer as a computing platform, we study lattice gauge theory with discrete gauge groups. As digitization of continuous gauge groups necessarily involves an approximation of the symmetry, we extend the formalism of previous studies on the annealer to finite, simply reducible gauge groups. As an example we use the dihedral group D_n with $n = 3, 4$ on a two plaquette ladder for which we provide proof-of-principle calculations of the ground-state and employ the known time evolution formalism with Feynman clock states.

Primary author: FROMM, Michael

Co-authors: PHILIPSEN, Owe (Goethe-University Frankfurt); WINTEROWD, Christopher (Goethe University Frankfurt)

Presenter: FROMM, Michael

Session Classification: Algorithms

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