Simulation of dynamic abelian and non abelian gauge theories with ultracold atoms

Erez Zohar
Max Planck Institut fuer Quantenoptik, Germany

We use several methods of ultracold atoms trapped in optical lattices as quantum simulators for 1+1 and 2+1 dimensional dynamic gauge theories and probe confinement - flux tubes and flux loops.
The simulating methods are different and use various implementations - either BECs or single atoms, and include the possibility to simulate the dynamics and observe confinement, as well as measure Wilson Loops, in Abelian (U(1) - compact QED and Z_N) or non-Abelian (SU(N)) lattice gauge theories.

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