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# Cold atoms meet lattice gauge theory

*Wednesday 14 July 2021 15:00 (1 hour)*

The central idea of this review talk is to consider quantum field theory models relevant for particle physics and replace the fermionic matter in these models by a bosonic one. This is mostly motivated by the fact that bosons are more "accessible"' and easier to manipulate for experimentalists, but this "substitution'" also leads to new physics and novel phenomena. It allows us to gain new information about among other things confinement and the dynamics of the deconfinement transition. We will thus consider bosons in dynamical lattices corresponding to the bosonic Schwinger or Z2 Bose-Hubbard models. Another central idea of this review concerns atomic simulators of paradigmatic models of particle physics theory such as the Creutz-Hubbard ladder, or Gross-Neveu-Wilson and Wilson-Hubbard models. Finally, we will briefly describe our efforts to design experimentally friendly simulators of these and other models relevant for particle physics.

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