B. Reznik: *Simulation of dynamic abelian and non-abelian gauge theories with ultracold atoms*

Dynamical gauge fields play the key role of force mediators between matter fields in HEP models such as QED and QCD. The smallness of the fine-structure constant, leads to perturbatively well behaved results for QED, however for QCD, gauge fields give rise to the effect of Quark confinement, which determines the basic structure of Hadronic matter, as well as to other effects (e.g. Color Superconductivity), which are non-perturbative and hard computationally.
Recently it has been suggested that the above systems can be simulated using ultra cold atoms. I shall discuss these recent developments.

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