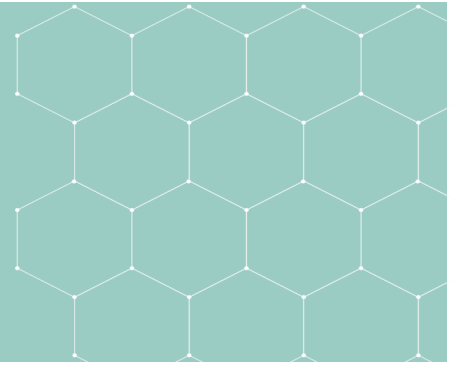




PHYSICS
COLORADO STATE UNIVERSITY



CSU PHYSICS COLLOQUIUM

Quantum Matter Built from Nanoscopic Lattices of Atoms and Photons

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April 8, 2019 4:00 p.m.
120 Engineering (Hammond Auditorium)

Abstract

New paradigms for optical physics emerge with lattices of atoms trapped in one and two-dimensional photonic crystals [1]. Exemplary experimental platforms include photonic crystal waveguides and cavities. Owing to their small optical loss and tight field confinement, these nanoscale dielectric devices are capable of mediating long-range atom-atom interactions using photons propagating in their guided modes. In a complimentary fashion, long-range interactions between photons can be mediated by an underlying lattice of atoms. Such systems have the potential to provide new tools for quantum phases of light and matter, scalable quantum networks, and quantum metrology.

[1] D. Chang *et al.*, Rev. Mod. Phys. **90**, 031002 (2018).

