

Abstract Submitted
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Single photon transmission in disordered waveguide QED in the presence of chiral couplings IMRAN MIRZA, JOHN SCHOTLAND, Univ of Michigan - Ann Arbor — Strong light-matter interactions lie at the heart of several applications of quantum optics in information processing. In recent times, emitters coupled to nanophotonic waveguides (waveguide QED) has attracted a lot of attention due to the possibility of producing chiral (unidirectional) couplings between the emitters and the waveguide field [Nature, 541, 473-480 (2017)]. So far most of the work in the context of multiple emitter-waveguide QED has focused on the scenario in which emitters are periodically placed and are symmetrically coupled with the waveguide. In this talk, I'll discuss our recent work on this subject [Phys. Rev. A 96, 053804 (2017)] where we have considered a novel problem of photon transport in disordered waveguide QED (either emitter position or emitter transition frequency is disordered). Particularly, I'll focus on how the presence of semi-perfect to perfect chiral couplings can influence the formation of extended or localized photon states.

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