Abstract Submitted
for the OSF19 Meeting of
The American Physical Society

Deterministic Routing of Single Photons in Multi-emitter Chiral Waveguide QED BIBANDHAN POUDYAL, NATHAN KRAVITZ, IMRAN MIRZA, Macklin Quantum Information Sciences, Physics Department, Miami University, Oxford, OH — On-demand single-photon generation and propagation are one of the key requirements in performing several quantum information processing protocols. Gonzalez et al. have recently proposed deterministic routings of few photons in double-waveguide quantum electrodynamics (QED) utilizing preferential photon emissions into waveguide modes (chirality). Extending their work, in this study, we ask the question that how the performance of such a single-photon quantum router involving chiral waveguides alters in the many-emitter regime. In particular, we ask the question that can we gain better control of routing phenomena in the presence of many-emitters? With the recent developments in scalability of circuit QED platforms, we believe that our work can find applications in near future quantum networking and quantum computing experiments.

Bibandhan Poudyal
Macklin Quantum Information Sciences, Physics Dept, Miami University

Date submitted: 26 Sep 2019 Electronic form version 1.4