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Single-photon routing in many-emitter waveguide quantum electrodynamics BIBANDHAN POUDYAL, NATHAN KRAVITZ, ASHWIN MISHRA, IMRAN MIRZA, Macklin Quantum Information Sciences, Department of Physics, Miami University, Oxford Ohio 45056, USA — Single-photon routing had seen a tremendous amount of research activity in the past decade due to its applicability in quantum information processing and on-chip quantum computing. The problem of single-photon routing in two single modes of waveguides coupled with a quantum emitter has already been studied [Phys. Rev. A 94, 063817 (2016)]. The focus of this study is to investigate how the presence of many emitters will influence the single-emitter version of photon routing scheme. The results of this work may find applications in quantum circuitry and many-body physics in optical systems.

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