

Abstract Submitted  
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**Cooperative many-atom response in a one-dimensional electromagnetic waveguide** JANNE RUOSTEKOSKI, University of Southampton, JUHA JAVANAINEN, University of Connecticut — One-dimensional nature of several nanophotonic devices provides enhanced atom-light coupling due to tight light confinement. We investigate a cold atom cloud coupled to a one-dimensional waveguide and study collective many-atom effects in such a system when light mediates strong interactions between the atoms. The atoms respond cooperatively to incident light in a one-dimensional continuum of electromagnetic modes of the waveguide as a result of recurrent scattering processes. The atom-waveguide system displays light transport phenomena distinct from those of many-atom cavity quantum electrodynamics. We specifically address the effects of atom statistics and interactions.

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