

Abstract Submitted
for the DAMOP12 Meeting of
The American Physical Society

Atom-cavity system as a passive photon adder¹ JULIO GEABANACLOCHE, University of Arkansas — A single three-level atom, in the Λ configuration, in an optical microcavity has been shown to have the potential to provide a totally passive photon-photon quantum logical gate [Koshino et al., Phys. Rev. A **82**, 010301(R) (2010)]. Recently, the same system has also been shown to work as a “photon turnstile,” or photon subtracter, which could remove a single photon from an incident N -photon pulse by changing its polarization to an orthogonal state [Rosenblum et al., Phys. Rev. A **84**, 033854 (2011)]. Here the possible performance of this system as a photon adder or subtracter will be analyzed, for different types of initial states, paying special attention to spectral entanglement effects and pulse reshaping.

¹Supported by NSF

Julio Gea-Banacloche
University of Arkansas

Date submitted: 30 Jan 2012

Electronic form version 1.4