Abstract Submitted
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Possibility of cavity optomechanical phase shifts at the single photon level[1] JULIO GEA-BANACLOCHE, University of Arkansas — The dispersive bistability of a cavity optomechanical system could be exploited to imprint different phase shifts on pulses containing different numbers of photons. These phase shifts could, in turn, be used for quantum logical operations. Analytical and numerical results for a weak classical field will be presented that show the scheme is at least conceptually feasible; however, relatively fast damping of the movable mirror and careful shaping of the pulses appear to be crucial in order to obtain large (classical) fidelities. Calculations for quantized single- and two-photon pulses will also be presented and discussed.

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