Abstract Submitted
for the DAMOP07 Meeting of
The American Physical Society

Progress Towards High Efficiency Atom-Photon Interface with Atomic Ensembles[1] ALEX NEMIROSKI, PHILIP WALTHER, ALEXEY GORSHKOV, ALEXANDER ZIBROV, MIKHAIL LUKIN, Harvard University — We describe our progress towards the generation and manipulation of narrow-bandwidth single photons and entangled photon pairs using a room-temperature ensemble of 87Rb atoms. Our method involves the creation of a collective atomic coherence via Raman scattering and projective measurement, followed by the coherent transfer of this atomic coherence to photons using electromagnetically induced transparency (EIT). We describe our current efforts towards developing a high performance system. These include optimization of the atomic level scheme, timing and preparation sequence, and buffer gas pressures.

[1]Supported by DARPA.

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Date submitted: 05 Feb 2007 Electronic form version 1.4