Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Three Level Systems for Quantum Memories in Erbium Doped Materials SARA HASTINGS-SIMON, MATTHIAS STAUDT, BJOERN LAURITZEN, MIKAEL AFZELIUS, HUGUES DE RIEDMATTEN, NICOLAS SANGOUARD, CHRISTOPH SIMON, University of Geneva, WOLFGANG TITTEL[1], NICOLAS GISIN, University of Geneva — Quantum memories for single photons could play an important role in quantum communication and optical quantum computing. We are working towards the realization of such a quantum memory based on the controlled reversible inhomogeneous broadening (CRIB) of a single absorption line in a rare earth ion. The implementation of the CRIB protocol for such a quantum memory requires a three level system such that the absorption over a broad bandwidth in a material can be greatly reduced via optical pumping to the auxiliary level. We report on the first experimental steps towards the realization of such a three level systems in Erbium doped materials with spectral hole burning techniques.

[1]University of Calgary

Sara Hastings-Simon
University of Geneva

Date submitted: 16 Nov 2006 Electronic form version 1.4