

Abstract Submitted
for the DAMOP09 Meeting of
The American Physical Society

Cross correlation between entangled photon pairs from four-wave mixing in a Warm Ensemble of Rubidium¹ TOMMY WILLIS, FRANCISCO WILLIS, DANIEL HEMMER, STEVEN ROLSTON, LUIS OROZCO, Joint Quantum Institute, Department of Physics and NIST, College Park MD 20742, USA — We investigate correlated photon-pair generation by spontaneous four-wave mixing from a continuously pumped warm ensemble of rubidium atoms. The correlated pairs occur at 780 nm and 1367 nm. We find that the temporal character of the cross correlation of the emitted photons can be modified by varying the pump laser detunings and powers. The cross-correlation function exhibits quantum beats that reflect the hyperfine structure of the intermediate level. Selective excitation of one of those levels can erase the oscillation. We find that the envelope of the cross-correlation function depends on the spectral features of the thick sample and the modification of the absorption from optical pumping processes.

¹Work supported by NSF

Tommy Willis
Joint Quantum Institute, University of Maryland Physics Department

Date submitted: 23 Jan 2009

Electronic form version 1.4