Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Single Photon Source Using Chiral Nematic Liquid Crystal GANESH SELVARAJ, Louisiana State University, ANAND JHA, University of Rochester, PAVEL LOUGOVSKI, MARIAN FLORESCU, Louisiana State University, ROBERT BOYD, University of Rochester, JONATHAN DOWLING, Louisiana State University — With the development of Linear Optics Quantum Computing, a demand for a good single photon source has increased. Here we describe how a cholesteric liquid crystal can be used as a photonic band-gap material to design a single-photon source.We have a dipole embedded in a liquid crystal for which we find the spontaneous emission rate. We calculate the band structureof the cholesteric liquid crystal using the eigenfuncton expansion method and ultimately compute the density of modes. We also determine the field of the dipole embedded inside the cholesteric liquid crystal using the Green's function method from which we determine the spontaneous emmission rate.

Ganesh Selvaraj
Louisiana State University

Date submitted: 05 Dec 2005 Electronic form version 1.4