Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Enhancement of Magneto-Chiral Effect in Photonic Crystals KEI SAWADA, CREST, Department of Applied Physics, the University of Tokyo, NAOTO NAGAOSA, CREST, Department of Applied Physics, the University of Tokyo — We theoretically study a magneto-chiral effect magnified in photonic crystals. A magneto-chiral effect is a directional birefringence even for unpolarized light. This effect occurs in a material such as $GaFeO_3$ in which both time-reversal and inversion symmetries are broken. Unfortunately the wave vector dependence of a dielectric function is typically the order of 10^{-4}, which is too small to observe. We consider one-dimensional photonic crystals composed of the magneto-chiral medium and air, and calculate the reflectivity. We found that the difference in the reflectivities with respect to different magnetization configurations is thousands of times enhanced compared with that in a bulk material.

Kei Sawada
CREST, Department of Applied Physics, the University of Tokyo

Date submitted: 29 Nov 2004 Electronic form version 1.4