Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

A magnetoelectric composite based microwave phase shifter M.I. BICHURIN, V.M. PETROV, Novgorod State University, Russia, G. SRINIVASAN, Oakland University, Rochester, MI — Magnetoelectric (ME) properties of ferrite-ferroelectric composites arise from their response to elastic and electromagnetic force fields. The unique combination of magnetic, electrical, and ME interactions opens up the possibility of electric field tunable ferromagnetic resonance (FMR) based devices [1]. Here we discuss an ME phase shifter operating in the FMR region at 9.3 GHz. A slot line on a yttrium iron garnet film bonded to lead zirconate titanate (PZT) provides a basis for the phase shifter. The circularly polarized microwave magnetic field of the slot line interacts with the ferrite and causes variation of phase velocity with the controlling magnetic and electric fields. Electrical tuning is realized with the application of a control voltage due to PZT. The estimated phase shift per unit length and unit voltage is to 20 deg/cm kV for a PZT thickness of 0.5 mm. 1 S. Shastry and G. Srinivasan, M.I. Bichurin, V.M. Petrov, A.S. Tatarenko. *Phys. Rev. B*, 70 064416 (2004). - supported by grants from the Office of Naval Research and the Russian Foundation for Basic Research.

Gopalan Srinivasan
Oakland University

Date submitted: 19 Nov 2007 Electronic form version 1.4