Abstract Submitted
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Magnetoelectric Composite Based Microwave Attenuator A. S. TATARENKO, M. I. BICHURIN, A. A. CHARLAMOV, D. A. FILIPPOV, Novgorod State University, Russia, G. SRINIVASAN, Oakland University, Rochester, MI — Ferrite-ferroelectric composites are magnetoelectric (ME) due to their response to elastic and electromagnetic force fields. The ME composites are characterized by tensor permittivity, permeability and ME susceptibility. The unique combination of magnetic, electrical, and ME interactions, therefore, opens up the possibility of electric field tunable ferromagnetic resonance (FMR) based devices [1]. Here we discuss an ME attenuator operating at 9.3 GHz based on FMR in a layered sample consisting of lead magnesium niobate-lead titanate bonded to yttrium iron garnet (YIG) film on a gadolinium gallium garnet substrate. Electrical tuning is realized with the application of a control voltage due to ME effect; the shift is 0-15 Oe as E is increased from 0 to 3 kV/cm. If the attenuator is operated at FMR, the corresponding insertion loss will range from 25 dB to 2 dB. 1. S. Shastry and G. Srinivasan, M.I. Bichurin, V.M. Petrov, A.S. Tatarenko. *Phys. Rev. B*, 70 064416 (2004). - supported by grants the grants from the National Science Foundation (DMR-0302254), from Russian Ministry of Education (02-3.4-278) and from Universities of Russia Foundation (UNR 01.01.026).

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