Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Lithographically defined tapered waveguides for transformation optics device applications[1] TODD ADAMS, KURT ERMER, ALEX PIAZZA, DAVE SCHAEFER, VERA SMOLYANINOVA, Towson University, IGOR SMOLYANINOV, University of Maryland — Recent progress in metamaterials and transformation optics (TO) give rise to such fascinating devices as perfect lenses, invisibility cloaks, etc., which are typically achieved with metamaterials. Realization of these devices using electromagnetic metamaterials would require sophisticated nanofabrication techniques. Recently we have demonstrated that the same effect may be achieved by much simpler means. By tapering a waveguide, one can literally "bend" optical space and achieve the same result. Our approach leads to much simpler designs, which require conventional lithographic techniques and readily available dielectric materials. Here we report fabrication of low cost TO devices, such as analogues of metamaterial lenses and invisibility cloaks. Their broadband properties will be demonstrated and performance for light of different polarization will be discussed.

[1]This work is supported by NSF grants DMR-0348939 and DMR-110476.

Todd Adams
Towson University

Date submitted: 02 Nov 2012 Electronic form version 1.4