

Abstract Submitted
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Experimental demonstration of birefringent broadband transformation Luneburg lenses¹ HENRY ERMER, VERA SMOLYANINOVA, ALEX PIAZZA, TODD ADAMS, DAVID SCHAEFER, Towson University, IGOR SMOLYANINOV, University of Maryland — Transformation optics (TO) has recently become a useful methodology in the design of unusual optical devices, such as novel metamaterial lenses and invisibility cloaks. Here we report the first experimental realization of birefringent TO designs of Luneburg lens based on lithographically defined metal/dielectric waveguides. Adiabatic variations of the waveguide shape enable control of the effective refractive indices experienced by the TE and TM modes propagating inside the waveguides. We have studied wavelength and polarization dependent performance of the resulting birefringent TO devices. These novel optical devices considerably extend our ability to control light on submicrometer scales.

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