Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Negative index lens aberrations DAVID SCHURIG, DAVID R. SMITH, Duke University, ECE Department — We examine the Seidel aberrations of thin spherical lenses composed of media with refractive index not restricted to be positive. We find that consideration of this expanded parameter space allows for the reduction or elimination of more aberrations than is possible with only positive index media. In particular, we find that spherical lenses possessing real aplanatic focal points are possible only with a negative index. We perform ray tracing, using a custom code that relies only on Maxwells equations and conservation of energy, that confirms the results of the aberration calculations. This research was supported by DARPA (Contract No. MDA972-01-2- 0016) and a Multiple University Research Initiative (MURI), sponsored by ONR (Contract No. N00014-01-1-0803).

David Schurig
Duke University, ECE Department

Date submitted: 05 Dec 2004 Electronic form version 1.4