

Abstract Submitted
for the OSS08 Meeting of
The American Physical Society

Finite Element Method Simulations of Metamaterial Devices at Terahertz Frequencies¹ JASON DEIBEL, SCOTT EILERMAN, Wright State University — Negative index materials that operate at terahertz frequencies can be difficult to model, fabricate, and characterize. We use the finite element method to simulate the interaction between negative index metamaterials and electromagnetic waves. A simple straight-wire pair structure is used to create a unit cell structure with an intended resonant frequency at 0.1 THz. Several unit cells are placed on opposite sides of a silicon substrate in order to form the modeled metamaterial device. Preliminary simulation data shows a strong, but narrow, drop in the transmitted power at approximately 0.125 THz. Further tests are planned to examine this dip and to fine-tune the frequency response by adjusting the unit cell structure and the substrate thickness and refractive index.

¹The authors wish to acknowledge the College of Science and Mathematics and the Office of Research and Sponsored Programs at Wright State University for financial support.

Jason Deibel
Wright State University

Date submitted: 03 Mar 2008

Electronic form version 1.4