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FEM Simulation of a Terahertz Metamaterial using Short/Long Metal Wire Pairs[1] ZACH GAULT, SCOTT EILERMAN, JASON DEIBEL, Wright State University, WRIGHT STATE UNIVERSITY COLLABORATION, IDCAST COLLABORATION — The goal of our work is to develop a successful metamaterial model with an intended negative index of refraction using a simple metal structure on a dielectric substrate. We have developed a structure consisting of short and long straight-wire pairs with a resonance at 0.1 THz. In order to optimize the design parameters of the metamaterial device, we use finite element method (FEM) simulations. We will show how the frequency-dependent transmission data is evaluated to determine the device's effective index of refraction, as well as discuss efforts to fabricate a THz metamaterial device and characterize it using terahertz time-domain spectroscopy.

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