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A Magnetic Field Tunable Lens of Left-Handed Material A.S. PETROV, R.V. PETROV, M.I. BICHURIN, Novgorod State University, Russia, G. SRINIVASAN, Oakland University, D. VIEHLAND, Virginia Tech. — The design, fabrication and characterization of lenses of left handed materials (LHM) based on ferrite spheres are presented. A unit-cell constructed from cross-wire resonators with 2-mm diameter polycrystalline yttrium iron garnet spheres at the center was used. The ferrite sphere facilitated LHM elements with magnetic-field dependent permeability. The focal length of the LHM lens, therefore, could be tuned with a magnetic field. The studies show that the YIG-cross-wire resonators are ideal tunable LHM lenses. The lens characteristics were measured in the frequency range from 1 to 18 GHz. For example, the focal point of the lens could be tuned over a length of 2 cm by varying the magnetic field from 4100 to 4125Oe at 11.5 GHz. - supported by a grant from the NSF.

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