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Broadband Characterization of Multiferroic Thin-Films NATHAN ORLOFF, JORDI MATEU, National Institute of Standards and Technology, Boulder, CO 80302, USA, MAKOTO MURAKAMI, Department of Material Science and Engineering, University of Maryland, College Park, MD 20742, USA, ICHIRO TAKEUCHI, Department of Physics, University of Maryland, College Park, MD 20742, USA, JAMES BOOTH, National Institute of Standards and Technology, Boulder, CO 80302, USA — The electromagnetic response of ferroelectric and multiferroic thin films at microwave frequencies is important for a fundamental understanding of these materials, as well for potential applications in electronics and communications systems. We explore the high-frequency response (to 40 GHz) of dielectric thin-film samples using a distributed measurement technique that utilizes patterned transmission line devices. We combine these measurements with measurements of lumped-element capacitors at lower frequencies (100 Hz - 100 MHz) to obtain true broadband measurements (100 Hz - 40 GHz) of the complex permittivity of thin film samples as a function of temperature, and electric- or magnetic-field bias.

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