407. Title:A micromachined terahertz waveguide 90 twist

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Abstract:Waveguide twists are often necessary to provide polarization rotation between waveguide-based components. At terahertz frequencies, it is desirable to use a twist design that is compact in order to reduce loss; however, these designs are difficult if not impossible to realize using standard machining. This paper presents a micromachined compact waveguide twist for terahertz frequencies. The Rud-Kirilenko twist geometry is ideally suited to the micromachining processes developed at the University of Virginia. Measurements of a WR-1.5 micromachined twist exhibit a return loss near 20 dB and a median insertion loss of 0.5 dB from 600 to 750 GHz.