Abstracts

Low-Loss Monolithic Transmission Lines for Submillimeter and Terahertz Frequency Applications

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The design and construction of low-loss monolithic transmission lines are critical to systems which require that THz-power be guided to the antenna front:ends. This paper proposes two types of novel monolithic guiding structures, which are designed for. the 0.3-2.0 THz and 0.1-0.3 THz ranges, respectively. The new waveguides are constructed from dielectric materials and structures which are available in monolithic technology so that the integration of active devices is possible. Propagation in each of the waveguides is characterized over relevant frequency ranges by applying a mode-matching technique, which takes into account all forms of electromagnetic coupling as well as losses in the dielectrics. The structures are predicted to exhibit excellent power confinement and low losses.

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