Abstracts

High Resolution Millimeter Wave Fabry-Perot Interferometer

W. Culshaw. "High Resolution Millimeter Wave Fabry-Perot Interferometer." 1960 Transactions on Microwave Theory and Techniques 8.2 (Mar. 1960 [T-MTT]): 182-189.

The design and operation of a microwave Fabry-Perot interferometer at wavelengths around 6 mm is described. This uses reflectors which are simple, easy to make, and which are capable of scaling for operation at short wavelengths in the ultramicrowave region. With power reflection coefficients around 0.999, very sharp fringes and Q values around 100,000 were obtained on the interferometer. Effects of diffraction in the interferometer are considered, and wavelength measurements with this particular interferometer indicate that accuracies of 0.04 per cent are obtained without any diffraction correction. Advantages of such an interferometer for ultramicrowaves are that the component parts are large compared with the wavelength, the effects of diffraction decrease with the wavelength, and the problem of maintaining a high Q with a single mode of propagation and a structure of adequate size is made much easier. Such an interferometer forms the cavity resonator for ultramicrowaves. It can thus be used for such conventional purposes as wavelength measurements, wavelength spectral analysis, dielectric constant, and loss measurements, or as the cavity resonator for frequency stabilization, or as the cavity resonator for a millimeter- or submillimeter-wavelength maser.

❑ Return to main document.