Abstracts

Dual-Mode Reflectometer for Measuring Microwave Magnetic Kerr Effect in Semiconductors

P.S. Hauge and K.S. Champlin. "Dual-Mode Reflectometer for Measuring Microwave Magnetic Kerr Effect in Semiconductors." 1967 Transactions on Microwave Theory and Techniques 15.7 (Jul. 1967 [T-MTT]): 406-410.

The "dual-mode reflectometer" is a device with which one can measure the relative off-diagonal terms of the tensor reflection coefficient of a hybrid mode composed of two degenerate, mutually perpendicular, independent modes. It differs from the conventional "single-mode reflectometer" in that it permits launching elliptically polarized waves of arbitrary orientation and ellipticity into the main (circular or square) waveguide and observing the orientation and ellipticity of the wave reflected by the load. This paper describes application of the dual-mode reflectometer to measurement of the magnetic Kerr effect in semiconductors. The accuracy and resolution of the apparatus is demonstrated with measurements of germanium and silicon at x band. A scattering matrix analysis is given which describes the measurement and calibration procedure.

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