

THE MICROWAVE INTERFEROMETER FOR MEASURING THE TIME DISPLACEMENT
OF A PROJECTILE WITHIN THE BARREL OF A GUN

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This paper discusses the design and tests of a Microwave Interferometer, an instrument capable of measuring the time-displacement of a projectile within the barrel of a gun. A continuous record of the projectile time-displacement is obtained by using a CW-Doppler radar technique at K-band. A discussion is made of the effect of higher order modes within the gun barrel and of the effect of the leakage of the propellant gases ahead of the projectile.

(Abstract)

PERFORMANCE OF FERRITES IN THE MICROWAVE RANGE

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The discovery of microwave Faraday rotation in ferrites has opened up a whole new field of investigation and applications. An elementary explanation of the cause of Faraday rotation will be given with the aid of a model of a spinning electron, which can demonstrate ferromagnetic resonance and negative permeability. Some of the applications of ferrites to microwave circulators, modulators and phase changers will be discussed.

(Abstract)

MICROSTRIP - A NEW MICROWAVE TRANSMISSION TECHNIQUE

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A new use is made of the classical two-wire transmission line in its application to microwave transmission.

By the introduction of a ground plane, the familiar two-wire line is reduced to a planar configuration which permits important advantages to be obtained compared to present microwave techniques. These advantages include good electrical characteristics, reduction in size and weight, with corresponding reduction in manufacturing costs since printed circuit techniques become applicable.

The general characteristics of this system are presented together with application information with respect to components, etc.

(Abstract)