# Abstracts

## Perturbation of Optical Resonator Characteristics by an Inhomogeneous Focusing Medium

*S.A. Harrison and W.K. Kahn. "Perturbation of Optical Resonator Characteristics by an Inhomogeneous Focusing Medium." 1966 G-MTT International Microwave Symposium Digest 66.1 (1966 [MWSYM]): 179-183.*

The perturbation produced in the stability characteristics of an empty curved mirror optical resonator upon insertion of an inhomogeneous focusing medium has been examined in the general case wherein the space between mirrors is only partially occupied by such a medium. Stability of optical modes in a resonator is closely related to the behavior of paraxial rays. Such rays are either confined to the structure (termed "stable") or diverge from the structure ("unstable"). In the formulation presented here the significant parameters result directly from the multiplication of transfer matrices in a somewhat different form than that previously given by Kogelnik. The importance of the configuration analyzed is underlined by the experimental observations of Welling and others regarding the presence of refractive index gradients in flashed laser materials. The computed results suggest an experiment employing the losses of a resonator operating near the instability boundary as an independent indication of the refractive gradient.

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