Appl. Phys. 19, 105–117 (1979)

Applied Physics

Resonance, Phase Front, and Polarization-Independence Constraints of Inhomogeneous Fabry-Perot Interferometers

S. Raz and *Y. Leviatan*

Faculty of Electrical Engineering, Technion – Israel Institute of Technology, Haifa, Israel

Received 5 September 1978/Accepted 15 November 1978

Abstract. The major objective of this paper is to demonstrate the feasibility of imposing local resonance conditions while simultaneously controlling phase front properties upon transmission through slowly-varying Fabry-Perot type interferometers.

The interaction of arbitrarily distorted incident phase fronts with double and triple-screened resonators is formulated, and appropriate design procedures are outlined. Special attention is paid to the significant effects of dielectric loading on the effective frequency band and to the cross polarization problem which arises, unavoidably, in conjunction with two-dimensional phase front distortions.

The suggested design procedures are demonstrated via concrete numerical examples which are subsequently analyzed throughout a finite (20%) bandwidth.

PACS: 42.10, 78.20, 84