

Abstracts

Guided Wave Approaches to Optical Bistability

G.I. Stegeman. "Guided Wave Approaches to Optical Bistability." 1982 *Transactions on Microwave Theory and Techniques* 30.10 (Oct. 1982 [T-MTT] (Special Issue on Optical Guided Wave Technology)): 1598-1607.

We have analyzed four different guided wave approaches to achieving a power dependent refractive index and optical bistability. These include surface plasmons at the interface between a metal and a semiconductor, symmetric surface plasmon modes guided by thin metal films, conventional single film integrated optics waveguides, and multifilm integrated optics. The relative merits of each geometry are discussed for utilizing the large cubic nonlinearities in the semiconductors GaAs and InSb. Both the mode attenuation and the minimum power required for a nonlinear phase shift of $\pi/2$ are evaluated numerically and it is shown that usable propagation distances can be obtained, even for highly lossy media such as GaAs.

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