Abstracts

Analysis of optically controlled planar dielectric waveguides operating in the millimeter-wave band using FDTD

R.G. Farias and A.J. Giarola. "Analysis of optically controlled planar dielectric waveguides operating in the millimeter-wave band using FDTD." 1999 Transactions on Microwave Theory and Techniques 47.5 (May 1999 [T-MTT]): 639-642.

The finite-difference time-domain (FDTD) technique is applied to the analysis of planar dielectric waveguides controlled by means of an optical beam. This beam, with an appropriate energy, induces a nonuniform plasma in a semiconductor layer deposited on the waveguide core. The resulting effects are analyzed through the phase dispersion characteristics. Due to the complexity of the problem, the FDTD formulation does not allow the calculation of the attenuation characteristic, particularly when the plasma presents an intermediate density, which causes a strong interaction with the guided mode. The simulations shown here suggest that the light beam may have an effective control of the phase response of a single waveguide and of the coupling between two parallel coupled waveguides.

❑ Return to main document.