Abstracts

Finite-element modeling of broad-band traveling-wave optical modulators

M. Koshiba, Y. Tsuji and M. Nishio. "Finite-element modeling of broad-band traveling-wave optical modulators." 1999 Transactions on Microwave Theory and Techniques 47.9 (Sep. 1999, Part I [T-MTT]): 1627-1633.

A full-wave finite-element method with hybrid edge/nodal elements is, for the first time, applied to investigating the frequency dispersion of microwave propagation characteristics of broad-band traveling-wave (TW) optical modulators using planar electrode configurations. In order to produce a two-step analysis of electrooptic modulation of optical waveguides, the microwave electrode solver is linked to the optical waveguide solver. Numerical results are shown for an ultrabroad-band TW LiNbO/sub 3/ Mach-Zehnder optical modulator with a ridge structure, and the necessity of using the full-wave solver is verified by comparing the calculated 3-dB bandwidth and half-wavelength voltage with the experimental data.

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