Abstracts

An efficient high-order mixed-edge rectangular-element method for lossy anisotropic dielectric waveguides

Xin-Qing Sheng and Shanjia Xu. "An efficient high-order mixed-edge rectangular-element method for lossy anisotropic dielectric waveguides." 1997 Transactions on Microwave Theory and Techniques 45.7 (Jul. 1997 [T-MTT]): 1009-1013.

A new efficient high-order mixed-edge rectangular element method is proposed for the analysis of lossy anisotropic dielectric waveguides. The space construction of the high-order mixed-edge rectangular element is investigated and the explicit form of the shape function is given. The high-order mixed-edge element yields higher accuracy and faster convergence than the lowest order mixed-edge rectangular elements without spurious solutions, and is more efficient compared to the high-order covariant projection element. The computations of the propagation constants in the rectangular waveguide and the slab loaded waveguide show that the accuracy of this high-order mixed-edge element is about one order higher than that of the lowest order one, and the nodes used in the calculation are only two-thirds as many as those used in the high-order covariant projection element having the same accuracy. The calculations of the dispersion curves for the dominant mode in the waveguide loaded with the lossy anisotropic dielectric block verify the accuracy and efficiency of the present method.

❑ Return to main document.