Abstracts

An efficient method for solving 3D dielectric planar circuit with parabolic equation

In this paper, a 3D wide-angle parabolic equation algorithm combining the Douglas scheme and the Pade series expansion is given for photonic integrated circuits and devices. The present method is easy to solve numerically by using the operator splitting method in allowing wider propagation angles, and the truncation error of the Douglas operator scheme is fourth-order $O(/spl Delta/x/sup 4/)$ for finite differences in the transverse direction. Therefore, it is expected that this technique can improve the accuracy and efficiency of computation for optical field propagation. Finally, numerical examples are presented for a ridge-type 3D waveguide, a curved 3D waveguide model and a primitive MMI device.

❏