

Numerical analysis of dielectric-rod waveguides with deep corrugation

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Dielectric-rod waveguides with deep surface corrugation is analyzed by using the finite-difference time-domain method. In order to mitigate the load in numerical calculation and to analyze a wide region, the method is formulated in two-dimensional form. It is shown that disks located in a line function as a waveguide of low loss in a frequency region. The procedure of deciding the propagation constant from the analyzed field is presented. The complex propagation constant is obtained and the dependence of the amount of radiation on the corrugation amplitude is discussed.

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