

# **Error analysis of the numerical solution of the problem of electromagnetic radiation propagation in a radially symmetrical waveguide**

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## ***Abstract***

This work solves the problem of propagation of a monochromatic electromagnetic wave in a radially symmetric waveguide surrounded by a conducting shell. A Crank-Nicholson difference scheme is developed to solve the problem. The error analysis is performed for the following two special cases providing for an analytical solution: a) the case when the effect of the environment self-action is neglected and the refractive index is constant; b) the case when the dependence of the refractive index in the radial section is parabolic.

***Keywords:*** electromagnetic radiation, radially symmetrical waveguide, monochromatic wave, Crank-Nicholson difference, refractive index.

***Citation:*** Belousov AA, Gavrilov AV, Degtyarev AA. Error analysis of the numerical solution of the problem of electromagnetic radiation propagation in a radially symmetrical waveguide. *Computer Optics* 2003; 25: 29-35.

[Access full text \(in Russian\)](#)

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