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Studying the surface wave spectrum of an open inhomogeneous rectangular dielectric waveguide. (English. Russian original) [Zbl 1478.78046](#)

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Summary: We consider the problem of surface waves in a regular open inhomogeneous waveguide structure of rectangular cross-section. This problem is reduced to a boundary value problem for the longitudinal components of the electromagnetic field in Sobolev spaces. A variational statement of the problem is used to find the solution. Theorems on the discreteness of the spectrum and on the distribution of the characteristic numbers of an operator function on the complex plane are proved. The characteristic numbers of the problem correspond to the waveguide propagation constants.

MSC:

[78A50](#) Antennas, waveguides in optics and electromagnetic theory

[78A40](#) Waves and radiation in optics and electromagnetic theory

[35P30](#) Nonlinear eigenvalue problems and nonlinear spectral theory for PDEs

[35Q60](#) PDEs in connection with optics and electromagnetic theory

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