A problem of diffraction of $E$-polarized electromagnetic wave is considered. The scatterer is a system of plane screens with gaps submerged into lossy dielectric (its dielectric permittivity is a complex number). The problem is reduced to a nonlinear operator equation with respect to the spectral operator. The latter equation is solved by the Newton techniques and results in unusual dual integral equations with kernels of integrals containing exponential functions. It is suggested to use Chebyshev polynomials for their solution. Numerical results indicate that the suggested approach to treating a complex obstacle as a superposition of several elementary inhomogeneities is an effective means for solution of electromagnetic diffraction problems for complex screens and obstacles.

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MSC:

- 65R20  Numerical methods for integral equations
- 45F10  Dual, triple, etc., integral and series equations
- 78A45  Diffraction, scattering

Keywords:

- electromagnetic waves scattering; lossy dielectric; Newton techniques; dual integral equations; numerical solution; diffraction