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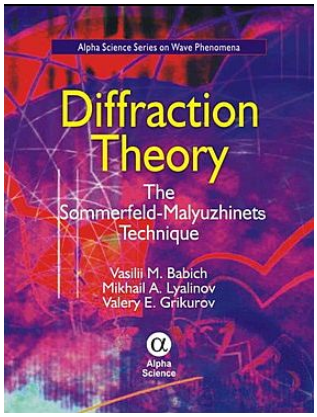

Diffraction Theory

The Sommerfeld-Malyuzhinets Technique

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Diffraction Theory: *The Sommerfeld-Malyuzhinets Technique* gives detailed description of the method and its related mathematical aspects. The authors have paid much attention to manifest basic ideas and connect into the whole picture various relevant mathematics. On the other hand some modern applied problems with more complicated boundary conditions are also addressed. The development of the technique is achieved by examination of problems to those the corresponding Malyuzhinets's system of functional equations cannot be solved exactly (for example, the problem of electromagnetic wave skew incidence on an impedance wedge).

Due to the localization principle the results based on the Sommerfeld-Malyuzhinets method can be exploited by the Geometrical Theory of Diffraction (GTD) or its equivalent versions for construction of the far-field asymptotic solutions in various situations of research and engineering practice.

CONTENTS: Introduction and Historic Remarks / The Diffraction Problem in Angular Domains / Solutions of the Helmholtz Equation by the Sommerfeld Integral / Sommerfeld Integral in the Problem of the Plane-Wave Diffraction by a Perfect Wedge / Sommerfeld-Diffraction Problem on a Riemann Surface and the Uniform Far-Field Asymptotics/ Diffraction by a Wedge with Impedance-Boundary Conditions (the Malyuzhinets Problem) / General Theory of the Malyuzhinets-Type Equations with One Unknown Function / Green's Function for an Angular Domain (Cylindrical-Wave Diffraction) / Diffraction of a Plane Wave by a Wedge with Thin Dielectric Coatings / Wave Diffraction in the Wedge's Exterior Bisected by a Semi-Transparent Layer / Diffraction of a Skew-Incident Plane Electromagnetic Wave by an Impedance Wedge / Concluding Remarks / Appendices / References / Index.

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