



Far Field Amplitudes and Inverse Diffraction Theory (Classic Reprint) (Paperback)

By S N Karp

Forgotten Books, United States, 2015. Paperback. Book Condition: New. 229 x 152 mm. Language: English . Brand New Book ***** Print on Demand *****. Excerpt from Far Field Amplitudes and Inverse Diffraction Theory In electromagnetic and acoustic diffraction problems the behavior of the plane wave far field scattering amplitude is of crucial importance, both theoretically and practically. In the present paper we present some new properties of this function for plane wave excitation, in the case of two dimensional scattering and with special reference to the inverse diffraction problem. The function in question, which will be defined analytically below, is a continuous analogue of a scattering matrix. For a given scatterer and frequency, it depends on two variables, the angle of incidence θ of the plane wave, and the angle of observation ϕ of the far diffracted field at infinity. We call it $f(\theta, \phi)$. In the first part of the analysis, section 3 we consider determinants formed from the values of this f -function. We deduce necessary and sufficient geometrical conditions (as to the geometry of the scatterer) for the vanishing of such determinants, under specific hypotheses as to the boundary conditions being fulfilled. These conditions show that for an acoustically...

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