



Scattering of Electromagnetic Waves by Obstacles

Gerhard Kristensson

Scattering Of Electromagnetic Waves From

Andrey V. Osipov, Sergei A. Tretyakov



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The Scattering of Electromagnetic Waves from Rough Surfaces Petr Beckmann, André Spizzichino, 1963 Scattering of Electromagnetic Waves Leung Tsang, Jin Au Kong, Kung-Hau Ding, 2004-03-24 A timely and authoritative guide to the state of the art of wave scattering Scattering of Electromagnetic Waves offers in three volumes a complete and up to date treatment of wave scattering by random discrete scatterers and rough surfaces Written by leading scientists who have made important contributions to wave scattering over three decades this new work explains the principles methods and applications of this rapidly expanding interdisciplinary field It covers both introductory and advanced material and provides students and researchers in remote sensing as well as imaging optics and electromagnetic theory with a one stop reference to a wealth of current research results Plus Scattering of Electromagnetic Waves contains detailed discussions of both analytical and numerical methods including cutting edge techniques for the recovery of earth land parametric information The three volumes are entitled respectively Theories and Applications Numerical Simulation and Advanced Topics In the first volume Theories and Applications Leung Tsang University of Washington Jin Au Kong MIT and Kung Hau Ding Air Force Research Lab cover Basic theory of electromagnetic scattering Fundamentals of random scattering Characteristics of discrete scatterers and rough surfaces Scattering and emission by layered media Single scattering and applications Radiative transfer theory and solution techniques One dimensional random rough surface scattering Scattering of Electromagnetic Waves Leung Tsang, 2001 Scattering of Electromagnetic Waves, Numerical Simulations Leung Tsang, Jin Au Kong, Kung-Hau Ding, Chi On Ao, 2004-04-07 A timely and authoritative guide to the state of the art of wave scattering Scattering of Electromagnetic Waves offers in three volumes a complete and up to date treatment of wave scattering by random discrete scatterers and rough surfaces Written by leading scientists who have made important contributions to wave scattering over three decades this new work explains the principles methods and applications of this rapidly expanding interdisciplinary field It covers both introductory and advanced material and provides students and researchers in remote sensing as well as imaging optics and electromagnetic theory with a one stop reference to a wealth of current research results Plus Scattering of Electromagnetic Waves contains detailed discussions of both analytical and numerical methods including cutting edge techniques for the recovery of earth land parametric information The three volumes are entitled respectively Theories and Applications Numerical Simulation and Advanced Topics In the second volume Numerical Simulations Leung Tsang University of Washington Jin Au Kong MIT Kung Hau Ding Air Force Research Lab and Chi On Ao MIT cover Layered media simulations Rough surface and volume scattering simulations Dense media models and simulations Electromagnetic scattering by discrete scatterers and a buried object Scattering by vertical cylinders above a surface Electromagnetic waves scattering by vegetation Computational methods and programs used for performing various simulations Scattering of Electromagnetic Waves Leung Tsang, Jin Au Kong, 2004-03-24 A timely and authoritative guide to the state of the art of wave

scattering Scattering of Electromagnetic Waves offers in three volumes a complete and up to date treatment of wave scattering by random discrete scatterers and rough surfaces Written by leading scientists who have made important contributions to wave scattering over three decades this new work explains the principles methods and applications of this rapidly expanding interdisciplinary field It covers both introductory and advanced material and provides students and researchers in remote sensing as well as imaging optics and electromagnetic theory with a one stop reference to a wealth of current research results Plus Scattering of Electromagnetic Waves contains detailed discussions of both analytical and numerical methods including cutting edge techniques for the recovery of earth land parametric information The three volumes are entitled respectively Theories and Applications Numerical Simulation and Advanced Topics In the third volume Advanced Topics Leung Tsang University of Washington and Jin Au Kong MIT cover Two dimensional random rough surface scattering Kirchhoff and related methods for rough surface scattering Analytic theory of volume scattering based on cascading of layers Analytic wave theory for medium with permittivity fluctuations Multiple scattering theory for discrete scatterers Quasicrystalline approximation in dense media scattering Dense media scattering Backscattering enhancement

A Study of the Scattering of Electromagnetic Waves from Certain Types of Random Media (microfilm). Roderic Lloyd Olsen, 1970 **The Scattering of Light and Other Electromagnetic Radiation** Milton Kerker, 2013-10-22 The Scattering of Light and Other Electromagnetic Radiation discusses the theory of electromagnetic scattering and describes some practical applications The book reviews electromagnetic waves optics the interrelationships of main physical quantities and the physical concepts of optics including Maxwell's equations polarization geometrical optics interference and diffraction The text explains the Rayleigh² theory of scattering by small dielectric spheres the Bessel functions and the Legendre functions The author also explains how the scattering functions for a homogenous sphere change depending on different physical parameters such as the optical size the complex refractive index and the angle of observation The author addresses the assignment of a complex dielectric constant and a corresponding refractive index to plasma when an alternating electrical field is applied that will make the plasma exhibit conductivity and polarization In a liquid the author points out that the intensity of scattering is one or two orders of magnitude less than that found in a gaseous system he explains that the molecules are no longer acting as incoherent nor as randomly located scatterers This book can be useful for physicists chemists biochemists and engineers whose work includes research utilizing light scattering in the study of certain gases pure liquids molecular solutions macromolecules polymers and glass *Scattering of Electromagnetic Waves, Numerical Simulations* Leung Tsang, 2001-06-01 A timely and authoritative guide to the state of the art of wave scattering Scattering of Electromagnetic Waves offers in three volumes a complete and up to date treatment of wave scattering by random discrete scatterers and rough surfaces Written by leading scientists who have made important contributions to wave scattering over three decades this new work explains the principles methods and applications of this rapidly expanding interdisciplinary field

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Modern Electromagnetic Scattering Theory with Applications Andrey V. Osipov, Sergei A. Tretyakov, 2017-01-20 This self contained book gives fundamental knowledge about scattering and diffraction of electromagnetic waves and fills the gap between general electromagnetic theory courses and collections of engineering formulas The book is a tutorial for advanced students learning the mathematics and physics of electromagnetic scattering and curious to know how engineering concepts and techniques relate to the foundations of electromagnetics

A More Exact Theory for the Scattering of Electromagnetic Waves from Statistically Rough Surfaces Donald Edward Barrick, 1965

Scattering of Electromagnetic Waves from Coated Rough Surfaces with Non-Gaussian Statistics Full Wave Approach Thomas R. Gumsinski, 1994

Radiation and Scattering of Waves Leopold B. Felsen, Nathan Marcuvitz, 1994-01-15 As relevant today as it was when it was first published 20 years ago this book is a classic in the field Nowhere else can you find more complete coverage of radiation and scattering of waves The chapter Asymptotic Evaluation of Integrals is considered the definitive source for asymptotic techniques This book is essential reading for engineers physicists and others involved in the fields of electromagnetics and acoustics It is also an indispensable reference for advanced engineering courses

Wave Scattering in Complex Media: From Theory to Applications Bart A. van Tiggelen, Sergey E. Skipetrov, 2012-12-06 A collection of lectures on a variety of modern subjects in wave scattering including fundamental issues in mesoscopic physics and radiative transfer recent hot topics such as random lasers liquid crystals lefthanded materials and time reversal as well as modern applications in imaging and communication There is a strong emphasis on the interdisciplinary aspects of wave propagation including light and microwaves acoustic and elastic waves propagating in a variety of complex materials liquid crystals media with gain natural media magneto optical media photonic and phononic materials etc It addresses many different items in contemporary research mesoscopic fluctuations localization radiative transfer symmetry aspects and time reversal It also discusses new potential applications in telecommunication soft matter and imaging

Scattering of Electromagnetic Waves by a Periodic Surface with Arbitrary Profile Tommy C.-H. Tong, Thomas B. A. Senior, 1972 Numerical procedures are

developed for the digital solution of the integral equations for the current induced on a perfectly conducting two dimensional periodic surface of arbitrary profile when a plane electromagnetic wave is incident By using Floquet s theorem the range of integration is reduced to a single period and special summation techniques consisting of a Poisson summation and the subtraction of the dc term are used to improve the convergence of the infinite series representation of the Green s function The integral equations are then solved numerically using the moment method and an interpolation scheme Data are obtained for both the surface and far fields for a variety of sinusoidal full wave rectified inverted full wave rectified and triangular profiles for plane waves of either polarization at oblique as well as normal incidence and the results are compared with the predictions of physical optics

Scattering of Electromagnetic Waves from Planar and Rough Oscillating Surfaces

Suresh Ramchandra Borkar,1972

A More Exact Theory for the Scattering of Electromagnetic Waves from

Statistically Rough Surfaces Donald E. Barrick,1985

Sideways Scattering of Electromagnetic Waves from Rough

Surfaces Mohammad Altaf Ali Qureshi,1968

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Profile Tommy C.-H. Tong,Thomas B. A. Senior,1972

Electromagnetic and Acoustic Scattering by Simple Shapes J. S.

Asvestas,1970 The book represents an exhaustive study of the scattering properties of acoustically soft and hard bodies and of perfect conductors presented for 15 geometrically simple shapes Such shapes are important in their own right and as a basis for synthesizing the radiation and scattering properties of more complex configurations Each shape is treated in a separate chapter whose contents are presented in stylized format for easy reference Emphasis is placed on results in the form of formulae and diagrams Although no detailed derivation are included an outline of methods in scattering theory is given in the Introduction Author

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Roughness H. A. Yueh,Robert T. Shin,Jin Au Kong,1987

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