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ISBN	1-119-07989-6 1-119-07953-5 1-119-07969-1
Edizione	[Second edition.]
Descrizione fisica	1 online resource (1,022 pages)
Collana	IEEE Press series on electromagnetic wave theory
Disciplina	539.2
Soggetti	Electromagnetic waves - Scattering Electromagnetic waves - Transmission
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical reference and indexes.
Nota di contenuto	Fundamentals. Introduction -- Fundamental Field Equations -- Waves in Inhomogeneous and Layered Media -- Waveguides and Cavities -- Green's Functions -- Radiation from Apertures and Beam Waves -- Periodic Structures and Coupled-Mode Theory -- Dispersion and Anisotropic Media -- Antennas, Apertures, and Arrays -- Scattering of Waves by Conducting and Dielectric Objects -- Waves in Cylindrical Structures, Spheres, and Wedges -- Scattering by Complex Objects -- Geometric Theory of Diffraction and Low-frequency Techniques -- Planar Layers, Strip Lines, Patches, and Apertures -- Radiation From A Dipole On The Conducting Earth -- Applications. Inverse Scattering -- Radiometry, Noise Temperature, and Interferometry -- Stochastic Wave Theories -- Geophysical Remote Sensing and Imaging -- Biomedical EM, Optics, and Ultrasound -- Waves in Metamaterials and Plasmon -- Time-Reversal Imaging -- Scattering by Turbulence, Particles, Diffuse Medium, and Rough Surfaces -- Coherence in Multiple Scattering and Diagram Method -- Solitons and Optical Fibers -- Porous Media, Permittivity, Fluid Permeability of Shales and Seismic Coda -- References -- IEEE Press Series on Electromagneticwave Theory.
Sommario/riassunto	One of the most methodical treatments of electromagnetic wave

propagation, radiation, and scattering / including new applications and ideas Presented in two parts, this book takes an analytical approach on the subject and emphasizes new ideas and applications used today. Part one covers fundamentals of electromagnetic wave propagation, radiation, and scattering. It provides ample end-of-chapter problems and offers a 90-page solution manual to help readers check and comprehend their work. The second part of the book explores up-to-date applications of electromagnetic waves - including radiometry, geophysical remote sensing and imaging, and biomedical and signal processing applications. Written by a world renowned authority in the field of electromagnetic research, this new edition of Electromagnetic Wave Propagation, Radiation, and Scattering: From Fundamentals to Applications presents detailed applications with useful appendices, including mathematical formulas, Airy function, Abel's equation, Hilbert transform, and Riemann surfaces. The book also features newly revised material that focuses on the following topics: . Statistical wave theories - which have been extensively applied to topics such as geophysical remote sensing, bio-electromagnetics, bio-optics, and bio-ultrasound imaging . Integration of several distinct yet related disciplines, such as statistical wave theories, communications, signal processing, and time reversal imaging. New phenomena of multiple scattering, such as coherent scattering and memory effects. Multiphysics applications that combine theories for different physical phenomena, such as seismic coda waves, stochastic wave theory, heat diffusion, and temperature rise in biological and other media. Metamaterials and solitons in optical fibers, nonlinear phenomena, and porous media Primarily a textbook for graduate courses in electrical engineering, Electromagnetic Wave Propagation, Radiation, and Scattering is also ideal for graduate students in bioengineering, geophysics, ocean engineering, and geophysical remote sensing. The book is also a useful reference for engineers and scientists working in fields such as geophysical remote sensing, bio / medical engineering in optics and ultrasound, and new materials and integration with signal processing.
