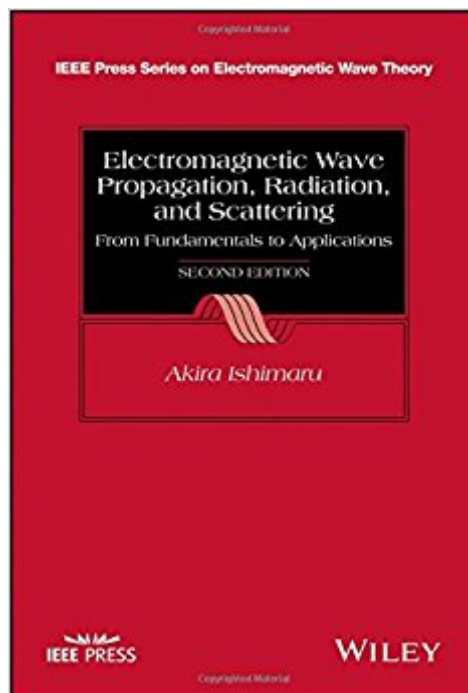


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Electromagnetic Wave Propagation, Radiation, And Scattering: From Fundamentals To Applications (IEEE Press Series On Electromagnetic Wave Theory)



Synopsis

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.Â 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, Abelâ€™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, bioâ€”medical engineering in optics and ultrasound, and new materials and integration with signal processing.

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Akira Ishimaru, PhD, has served as a member-at-large of the U.S. National Committee (USNC) and was chairman of Commission B of the USNC/International Union of Radio Science. He is a Fellow of the IEEE, the Optical Society of America, the Acoustical Society of America and the Institute of Physics, U.K. He is also the recipient of numerous awards in his field. He is a member of the National Academy of Engineering.

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