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Sommario/riassunto

The book is a complete, comprehensive description of the modern Physical Theory of Diffraction (PTD) based upon the concept of elementary edge waves. The theory is demonstrated with examples of the diffraction of acoustic and electromagnetic waves at perfectly reflecting objects. / Readers develop the skills to apply PTD to solve various scattering problems. The derived analytic expressions clearly illustrate the physical structure of the scattered field. They additionally describe all of the reflected and diffracted rays and beams, as well as the fields in the vicinity of caustics and foci. Shadow radiation, a fundamental component of PTD, is introduced and proven to contain half the total scattered power. The equivalence relationships between acoustic and electromagnetic diffracted waves are established and emphasized. Throughout the book, the author enables readers to master both the theory and its practical applications. / - Plotted numeric results supplement the theory and facilitate the visualization of individual contributions of distinct parts of the scattering objects to the total diffracted field / - Detailed comments help readers understand and implement all the critical steps of the analytic and numeric calculations / - Problem sets in each chapter give readers an opportunity to analyse and investigate the diffraction phenomena.