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| Altri autori (Persone) | WernerDouglas H. <1960-><br>KwonDo-Hoon |
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| Nota di contenuto | Transformation Electromagnetics for Cloaking, Lensing, and Radiation Applications -- Transformation Electromagnetic Cloaks and Theory of Non Radiating Canceling Currents -- Approaches for Designing Transformation Optics Devices for Physical Realizability -- Creating Illusion Effects Using Transformation Electromagnetics -- Transformation-Based Cloak/Anti-Cloak Interactions -- Transformation Electromagnetics Design of All-Dielectric Antennas -- Transformation Electromagnetics and Related Metamaterial Lens Designs for Highly-Directive Radiation -- Transformation Electromagnetics for Antenna Applications -- Invisibility Cloaks at Optical Frequencies -- Broadband Microwave Cloaking: Theory and Experiment -- Broadening of Cloaking Bandwidth by Passive and Active Techniques -- A General Macroscopic Anisotropic Representation for Spatially Dispersive Media. |
| Sommario/riassunto | Transformation electromagnetics is a systematic design technique for optical and electromagnetic devices that enables novel wave-material interaction properties. The associated metamaterials technology for designing and realizing optical and electromagnetic devices can control the behavior of light and electromagnetic waves in ways that have not been conventionally possible. The technique is credited with numerous |

novel device designs, most notably the invisibility cloaks, perfect lenses and a host of other remarkable devices. Transformation Electromagnetics and Metamaterials: Fundamental Principles and Applications presents a comprehensive treatment of the rapidly growing area of transformation electromagnetics and related metamaterial technology with contributions on the subject provided by a collection of leading experts from around the world. On the theoretical side, the following questions will be addressed: “Where does transformation electromagnetics come from?,” “What are the general material properties for different classes of coordinate transformations?,” “What are the limitations and challenges of device realizations?,” and “What theoretical tools are available to make the coordinate transformation-based designs more amenable to fabrication using currently available techniques?” The comprehensive theoretical treatment will be complemented by device designs and/or realizations in various frequency regimes and applications including acoustic, radio frequency, terahertz, infrared, and the visible spectrum. The applications encompass invisibility cloaks, gradient-index lenses in the microwave and optical regimes, negative-index superlenses for sub-wavelength resolution focusing, flat lenses that produce highly collimated beams from an embedded antenna or optical source, beam concentrators, polarization rotators and splitters, perfect electromagnetic absorbers, and many others. This book will serve as the authoritative reference for students and researchers alike to the fast-evolving and exciting research area of transformation electromagnetics/optics, its application to the design of revolutionary new devices, and their associated metamaterial realizations.