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Nota di contenuto	1. Transformation optics / Ulf Leonhardt -- 2. Conformal mapping in transformation optics / Kan Yao and Yongmin Liu -- 3. Quasiconformal transformation media and their electrostatic analogy / Jensen, Li, Fu Liu, Zheng Chang, and Gengkai Hu -- 4. Control of electromagnetic flux in inhomogeneous anisotropic media / Jie Luo, Yun Lai, and C.T. Chan -- 5. Transmission-line metamaterials for surface- to-leaky-wave transformation / Chung-Tse Michael Wu, Pai-Yen Chen, and Tatsuo Itoh -- 6. Metasurfaces for extreme light manipulation and wave control / Nasim Mohammadi Estakhri and Andrea Al -- 7. RF/optical scattering manipulation using metasurface coatings and plasmonic loadings / Zhi Hao Jing, Anastasios H. Panaretos, and Douglas H. Werner -- 8. Experiments on cloaking for surface water waves / Sebastien Guenneau, Guillaume Dupont, Stefan Enoch, and Mohamed Farhat -- 9. Cloaking for heat and mass diffusion / Sebastien Guenneau, David Petiteau, Myriam Zerrad, Claude Amra, and Tania M. Puvirajesinghe -- 10. Experiments on cloaking in electromagnetism, mechanics, and thermodynamics / Muamer Kadic, Robert Schittny,

Tiemo Buckmann, and Martin Wegener -- 11. Transformation multiphysics / Massimo Moccia, Giuseppe Castaldi, Salvatore Savo, Yuki Sato, and Vincenzo Galdi -- 12. Time reversal of linear and nonlinear water waves / A. Chabchoub, A. Maurel, V. Pagneux, P. Petitjeans, A. Prasadka, and M. Fink.

Sommario/riassunto

Space-time transformations as a design tool for a new class of composite materials (metamaterials) have proved successful recently. The concept is based on the fact that metamaterials can mimic a transformed but empty space. Light rays follow trajectories according to Fermat's principle in this transformed electromagnetic, acoustic, or elastic space instead of laboratory space. This allows one to manipulate wave behaviors with various exotic characteristics such as (but not limited to) invisibility cloaks. This book is a collection of works by leading international experts in the fields of electromagnetics, plasmonics, elastodynamics, and diffusion waves. The experimental and theoretical contributions will revolutionize ways to control the propagation of sound, light, and other waves in macroscopic and microscopic scales. The potential applications range from underwater camouflaging and electromagnetic invisibility to enhanced biosensors and protection from harmful physical waves (e.g., tsunamis and earthquakes). This is the first book that deals with transformation physics for all kinds of waves in one volume, covering the newest results from emerging topical subjects such as transformational plasmonics and thermodynamics.
