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Nota di contenuto	Contributors. -- Preface. -- 1. Negative-Refractive-Index Transmission-Line Metamaterials (A. Iyer & G. Eleftheriades). -- 2. Passive Microwave Devices and Antennas Using Negative-Refractive-Index Transmission-Line Metamaterials (G. Eleftheriades). -- 3. Super Resolving Negative-Refractive-Index Transmission-Line Lenses (A. Grbic & G. Eleftheriades). -- 4. Gaussian Beam Interactions with DNG Metamaterials (R. Ziolkowski). -- 5. Negative Index Lenses (D. Schurig & D. Smith). -- 6. Planar Anisotropic Resonance-Cone Metamaterials (K. balmain & A. L<U+008a>uttgen). -- 7. Negative Refraction and Subwavelength Imaging in Photonic Crystals (C. Luo & J. Joannopoulos). -- 8. Plasmonic Nanowire Metamaterials (A. Sarychev & V. Shalaev). -- 9. An Overview of Salient Properties of Planar Guided-Wave Structures with Double-Negative (DNG) and Single-Negative (SNG) Layers (A Alu and N. Engheta). -- 10. Dispersion Engineering: The Use of Abnormal Velocities and Negative Index of Refraction to Control the Dispersive

Sommario/riassunto

Learn about the revolutionary new technology of negative-refraction metamaterials Negative-Refraction Metamaterials: Fundamental Principles and Applications introduces artificial materials that support the unusual electromagnetic property of negative refraction. Readers will discover several classes of negative-refraction materials along with their exciting, groundbreaking applications, such as lenses and antennas, imaging with super-resolution, microwave devices, dispersion-compensating interconnects, radar, and defense. The book begins with a chapter describing the fundamentals of isotropic metamaterials in which a negative index of refraction is defined. In the following chapters, the text builds on the fundamentals by describing a range of useful microwave devices and antennas. Next, a broad spectrum of exciting new research and emerging applications is examined, including:

- * Theory and experiments behind a super-resolving, negative-refractive-index transmission-line lens
- * 3-D transmission-line metamaterials with a negative refractive index
- * Numerical simulation studies of negative refraction of Gaussian beams and associated focusing phenomena
- * Unique advantages and theory of shaped lenses made of negative-refractive-index metamaterials
- * A new type of transmission-line metamaterial that is anisotropic and supports the formation of sharp steerable beams (resonance cones)
- * Implementations of negative-refraction metamaterials at optical frequencies
- * Unusual propagation phenomena in metallic waveguides partially filled with negative-refractive-index metamaterials
- * Metamaterials in which the refractive index and the underlying group velocity are both negative

This work brings together the best minds in this cutting-edge field. It is fascinating reading for scientists, engineers, and graduate-level students in physics, chemistry, materials science, photonics, and electrical engineering.
