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Nota di contenuto	METAMATERIALS; CONTENTS; Foreword; Preface; ACKNOWLEDGMENTS; 1 Why Periodic Structures Cannot Synthesize Negative Indices of Refraction; 1.1 Introduction; 1.1.1 Overview; 1.1.2 Background; 1.2 Current Assumptions Regarding Veselago's Medium; 1.2.1 Negative Index of Refraction; 1.2.2 Phase Advance when $n(1) < 0$; 1.2.3 Evanescent Waves Grow with Distance for $n(1) < 0$; 1.2.4 The Field and Phase Vectors Form a Left-Handed Triplet for $n(1) < 0$; 1.3 Fantastic Designs Could Be Realized if Veselago's Material Existed; 1.4 How Veselago's Medium Is Envisioned To Be Synthesized Using Periodic Structures 1.5 How Does a Periodic Structure Refract?1.5.1 Infinite Arrays; 1.5.2

What About Finite Arrays?; 1.6 On the Field Surrounding an Infinite Periodic Structure of Arbitrary Wire Elements Located in One or More Arrays; 1.6.1 Single Array of Elements with One Segment; 1.6.2 Single Array of Elements with Two Segments; 1.6.3 Single Array of Elements with an Arbitrary Number of Segments; 1.6.4 On Grating Lobes and Backward-Traveling Waves; 1.6.5 Two Arrays of Elements with an Arbitrary Number of Segments; 1.6.6 Can Arrays of Wires Ever Change the Direction of the Incident Field?

1.7 On Increasing Evanescent Waves: A Fatal Misconception

1.8 Preliminary Conclusion: Synthesizing Veselago's Medium by a Periodic Structure Is Not Feasible; 1.9 On Transmission-Line Dispersion: Backward-Traveling Waves; 1.9.1 Transmission Lines; 1.9.2 Periodic Structures; 1.10 Regarding Veselago's Conclusion: Are There Deficiencies?; 1.10.1 Background; 1.10.2 Veselago's Argument for a Negative Index of Refraction; 1.10.3 Veselago's Flat Lens: Is It Really Realistic?; 1.11 Conclusions; 1.12 Common Misconceptions; 1.12.1 Artificial Dielectrics: Do They Really Refract? 1.12.2 Real Dielectrics: How Do They Refract? 1.12.3 On the E- and H-Fields; 1.12.4 On Concentric Split-Ring Resonators; 1.12.5 What Would Veselago Have Asked if . . . ; 1.12.6 On "Magic" Structures; References;

2 On Cloaks and Reactive Radomes; 2.1 Cloaks; 2.1.1 Concept; 2.1.2 Prior Art; 2.1.3 Alternative Explanation; 2.1.4 Alternative Design; 2.1.5 What Can You Really Expect from a Cloak?; 2.2 Reactive Radomes; 2.2.1 Infinite Planar Array with and Without Reactive Radome; 2.2.2 Line Arrays and Single Elements; 2.3 Common Misconceptions; 2.3.1 Misinterpretation of Calculated Results 2.3.2 Ultimately: What Power Can You Expect from a Short Dipole Encapsulated in a Small Spherical Radome? 2.4 Concluding Remarks; References;

3 Absorbers with Windows; 3.1 Introduction; 3.2 Statement of the Problem; 3.3 Concept; 3.4 Conceptual Designs; 3.5 Extension to Arbitrary Polarization; 3.6 The High-Frequency Band; 3.7 Complete Conceptual Absorber Design; 3.8 Practical Designs; 3.9 Other Applications of Traps: Multiband Arrays; Reference;

4 On Designing Absorbers for an Oblique Angle of Incidence; 4.1 Lagarkov's and Classical Designs; 4.2 Salisbury Screen; 4.3 Scan Compensation 4.4 Frequency Compensation

Sommario/riassunto

A Convincing and Controversial Alternative Explanation of Metamaterials with a Negative Index of Refraction In a book that will generate both support and controversy, one of the world's foremost authorities on periodic structures addresses several of the current fashions in antenna design—most specifically, the popular subject of double negative metamaterials. Professor Munk provides a comprehensive theoretical electromagnetic investigation of the issues and concludes that many of the phenomena claimed by researchers may be impossible. While denying the existence of negative refractio