
**ELECTROMAGNETIC
WAVES PIERM 21**

Progress

In

Electromagnetics

Research M

© 2011 EMW Publishing. All rights reserved.

No part of this publication may be reproduced. Request for permission should be addressed to the Publisher.

All inquiries regarding copyrighted material from this publication, manuscript submission instructions, and subscription orders and price information should be directed to: EMW Publishing, P. O. Box 425517, Kendall Square, Cambridge, Massachusetts 02142, USA.

E-ISSN 1937-8726

ELECTROMAGNETIC WAVES PIERM 21

Progress

In

Electromagnetics

Research M

Chief Editor: Weng Cho Chew

EMW Publishing

Cambridge, Massachusetts, USA

CONTENTS

A NEW ACCURATE MODEL OF HIGH-IMPEDANCE SURFACES CONSISTING OF CIRCULAR PATCHES*D. Ramaccia, A. Toscano, and F. Bilotti*

1	Introduction	1
2	Analytical Model	4
3	Numerical Validation	10
4	Conclusions	14

A PRINTED LOG-PERIODIC TREE-DIPOLE ANTENNA (PLPTDA)*S. Lin, S. Luan, Y. D. Wang, X. Luo, X. Han, X. Q. Zhang*

1	Introduction	19
2	LPT ² DA Antenna Design	21
3	Simulated and Experimental Results and Discussion	24
4	Conclusion	30

INTERFEROMETRIC ISAR THREE-DIMENSIONAL IMAGING USING ONE ANTENNA*C. I. Liu, X. Z. Gao, W. D. Jiang, and X. Li*

1	Introduction	33
2	Signal Model	34
3	3-D Imaging Algorithm	37
4	Simulations	41
5	Conclusions	43
	Appendix A.	44

EM TRANSMISSION RESPONSE OF MICROSTRIP NOTCH FILTER ON OBLIQUELY MAGNETIZED MAGNETODIELECTRIC SUBSTRATE IN X-BAND UNDER INFLUENCE OF LOW MAGNITUDE OF EXTERNAL DC MAGNETIC FIELD*S. Borah and N. S. Bhattacharyya*

1	Introduction	47
2	Experiment	48
3	Results	51

4	Discussion	54
5	Conclusion	56

CYLINDRICAL INVISIBILITY CLOAK INCORPORATING PEMC AT PERTURBED VOID REGION

A. Shahzad, F. Qasim, S. Ahmed, and Q. A. Naqvi

1	Introduction	61
2	Analytical Formulation	65
3	Numerical Results and Discussion	69
4	Conclusions	73

LINEAR AND NONLINEAR REFRACTIVE INDEX CHANGES IN SPHERICAL QUANTUM DOT

B. Çakır, Y. Yakar, and A. Özmen

1	Introduction	77
2	Theory	79
3	Results and Discussion	81
4	Conclusion	89

ELECTRICAL CONDUCTIVITY AND ELECTROMAGNETIC SHIELDING EFFECTIVENESS OF SILICONE RUBBER FILLED WITH FERRITE AND GRAPHITE POWDERS

C. Morari, I. Balan, J. Pintea, E. Chitanu, and I. Iordache

1	Introduction	93
2	Electromagnetic Interference Shielding	95
3	Terahertz Signals	95
4	Experimental	96
5	Results and Discussion	99
6	Conclusions	102

RECIPROCAL INVISIBLE CLOAK WITH HOMOGENEOUS METAMATERIALS

J. J. Yang, M. Huang, Y. L. Li, T. H. Li, and J. Sun

1	Introduction	105
2	Theoretical Model	106
3	Simulation Results and Discussion	109
4	Conclusion	113

**DIFFRACTION OF PLANE WAVE BY STRIP WITH
ARBITRARY ORIENTATION OF WAVE VECTOR**

S. S. Sautbekov

1	Introduction	117
2	Statement of the Problem	118
3	Solution of the Electric Problem	120
4	Solution of the Magnetic Problem	126
5	Conclusion	129

**ESTIMATION AND MITIGATION OF GPS MULTIPATH
INTERFERENCE USING ADAPTIVE FILTERING**

K. Yedukondalu, A. D. Sarma, and V. Satya Srinivas

1	Introduction	133
2	GPS Multipath Error Estimation	135
3	Mitigation of Multipath Error Using Adaptive Algorithms	137
4	Experimental Results and Discussion	139
5	Conclusions	146

**UNCERTAINTY PROPAGATION AND SENSITIVITY
ANALYSIS IN RAY-TRACING SIMULATIONS**

A. Haarscher, P. De Doncker, and D. Lautru

1	Introduction	149
2	Uncertain Inputs for a Ray-tracing Model	150
3	Spectral Methods	151
4	Sensitivity analysis	152
5	Ray-tracing Model	153
6	Probability Density Functions	154
7	Numerical Analysis	155
8	Uncertainty Propagation through the Ray-tracing Model	156
9	Output Uncertainty Computation	158
10	Conclusion	160

**MICROWAVE HEAD IMAGING FOR STROKE
DETECTION**

D. Ireland and M. Bialkowski

1	Introduction	163
2	Simulation Model	165
3	Imaging System	167

4 Results 170
 5 Conclusion 173

**EFFECTS OF REVERSE RADIATION NOISE ON
 MILLIMETER-WAVE RADIOMETRIC IMAGING AT
 SHORT RANGE**

T.-Y. Hu, Z.-L. Xiao, J.-Z. Xu, and L. Wu

1 Introduction 177
 2 Generation Mechanism of Reverse Radiation Noise 179
 3 Effects and Reduction of Reverse Radiation Noise 181
 4 Imaging Experiments 184
 5 Conclusion 186

**EXPERIMENTAL INVESTIGATION ON THE POWER
 ELECTRONIC TRANSISTOR PARAMETERS INFLU-
 ENCE TO THE NEAR-FIELD RADIATION FOR THE
 EMC APPLICATIONS**

*Y. T. Manjombe, Y. Azzouz, B. Ravelo, D. Baudry
 and M. E. H. Benbouzid*

1 Introduction 190
 2 Description of the NF Test Bench Used During the
 Experimentations 191
 3 Techniques Proposed for the EM NF Measurement of Power
 Electronic Transistors 195
 4 Conclusion 205

**EFFECT OF INHOMOGENEOUS PLASMA DENSITY ON
 THE REFLECTIVITY IN ONE DIMENSIONAL PLASMA
 PHOTONIC CRYSTAL**

S. Prasad, V. Singh, and A. K. Singh

1 Introduction 211
 2 Theoretical Modeling 212
 3 Results and Discussion 215
 4 Conclusion 219

WIRELESS NETWORKS INTERFERENCE AND SECURITY PROTECTION BY MEANS OF VEGETATION BARRIERS

J. Acuña, I. Cuiñas, and P. Gómez

1	Introduction	223
2	Measurement Campaign	224
3	Measurement Results	227
4	Coverage Analysis	230
5	Coverage Results	231
6	Conclusions	234

SPECTRAL DOMAIN ANALYSIS OF RESONANT CHARACTERISTICS AND RADIATION PATTERNS OF A CIRCULAR DISC AND AN ANNULAR RING MICROSTRIP ANTENNA ON UNIAXIAL SUBSTRATE

A. Motevasselian

1	Introduction	238
2	Formulations of the problem	239
3	Galerkin's Method and Characteristic Equations for Eigenvalues	243
4	Radiation Pattern	244
5	Numerical Results	245
6	Conclusion	249

ELECTROMAGNETIC RESPONSE OF A CIRCULAR DB CYLINDER IN THE PRESENCE OF CHIRAL AND CHIRAL NIHILITY METAMATERIALS

M. Khalid, S. Ahmed, A. A. Syed, and Q. A. Naqvi

1	Introduction	253
2	DB Cylinder Placed in Free Space	255
3	DB Cylinder Placed in Chiral/Chiral Nihility Medium	256
4	Chiral/Chiral Nihility Coated DB Cylinder	258
5	Numerical Results and Discussion	262
6	Conclusions	263

**EXCITATION OF ION AZIMUTHAL SURFACE MODES
IN A MAGNETIZED PLASMA BY ANNULAR FLOW OF
LIGHT IONS**

I. O. Girka, V. O. Girka, and I. V. Pavlenko

1	Introduction	267
2	Formulation of the Problem	269
3	Results of Numerical Analysis of the Dispersion Relation	271
4	Discussion of the Results	274

**PROXIMITY-FED MIMO ANTENNA WITH TWO
PRINTED IFAS AND A WIDEBAND T-SHAPED
NEUTRALIZATION LINE**

J.-F. Li and Q.-X. Chu

1	Introduction	280
2	Geometry of Proposed Antenna	281
3	Design Process and Operation Mechanism	282
	3.3 Implementation of the Wideband T-shaped Neutraliza- tion Line	285
4	Diversity Performance of the Proposed MIMO Antenna	288
5	Effect of Hand and Head	290
6	Conclusion	292