

---

**ELECTROMAGNETIC WAVES**

**PIER 148**

---

**Progress**

**In**

**Electromagnetics**

**Research**

© 2014 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.

ISSN 1070-4698

E-ISSN 1559-8985

---

**ELECTROMAGNETIC WAVES**  
**PIER 148**

---

**Progress**  
**In**  
**Electromagnetics**  
**Research**

Chief Editors: Weng Cho Chew and Sailing He

EMW Publishing  
Cambridge, Massachusetts, USA



## CONTENTS

<b>Analysis of Moving Human Micro-Doppler Signature in Forest Environments</b> Jose M. Garcia-Rubia, Ozlem Kilic, Vinh Dang, Quang Nguyen, and Nghia Tran . . . . .	1
<b>Antenna Pattern Retrieval from Reflection Coefficient Measurements with Reflective Loads</b> Zhou Du, Ville Viikari, Juha Ala-Laurinaho, Alekski Tamminen, and Antti V. Räsänen . . . . .	15
<b>Circular Polarized Patch Antenna Generating Orbital Angular Momentum</b> Mirko Barbuto, Fabrizio Trotta, Filiberto Bilotti, and Alessandro Toscano . . . . .	23
<b>An Efficient Dual-Circularly Polarized Rectenna for RF Energy Harvesting in the 2.45 GHz ISM Band</b> Walid Haboubi, Hakim Takhedmit, Jean-Daniel Lan Sun Luk, Salah-Eddine Adami Bruno Allard, François Costa, Christian Vollaire, Odile Picon, and Laurent Cirio . . . . .	31
<b>Novel Short Tapered Leaky Wave Antennas with Complementary Split Ring Resonator for Back Lobe Suppression</b> Jie-Huang Huang, Chien-Rung Huang, and Christina F. Jou . . . . .	41
<b>Snowfall Detectability of NASA’s CloudSat: The First Cross-Investigation of Its 2C-Snow-Profile Product and National Multi-Sensor Mosaic QPE (NMQ) Snowfall Data</b> Qing Cao, Yang Hong, Sheng Chen, Jonathan J. Gourley, Jian Zhang, and P. E. Kirstetter . . . . .	55
<b>A Printed Vivaldi Antenna with Improved Radiation Patterns by Using Two Pairs of Eye-Shaped Slots for UWB Applications</b> Kun Ma, Zhi Qin Zhao, Jiang Niu Wu, Mubarak S. Ellis, and Zai Ping Nie . . . . .	63
<b>Hybrid Simulation of Maxwell-Schrödinger Equations for Multi-Physics Problems Characterized by Anharmonic Electrostatic Potential</b> Takashi Takeuchi, Shinichiro Ohnuki, and Tokuei Sako . . . . .	73
<b>Differential Forms and Electromagnetic Field Theory</b> Karl F. Warnick and Peter Russer . . . . .	83
<b>Lattice Maxwell’s Equations</b> Fernando L. Teixeira . . . . .	113
<b>Robust Cylindrical Plasmonic Nano-Antennas for Light-Matter Interaction</b> Kaushal Choonee and Richard R. A. Syms . . . . .	129
<b>Inhomogeneous Microwave Lens Based on Periodically Loaded Transmission Lines</b> Joni Vehmas, Pekka Alitalo, and Sergei Tretyakov . . . . .	141
<b>Energy Transfer for Implantable Electronics in the Electromagnetic Midfield</b> John S. Ho and Ada S. Y. Poon . . . . .	151

---

<b>Mixed Finite Element Method for 2D Vector Maxwell's Eigenvalue Problem in Anisotropic Media</b>	
Wei Jiang, Na Liu, Yifa Tang, and Qing Huo Liu .....	159
<b>A General Solution to Wireless Power Transfer between Two Circular Loops</b>	
Ada S. Y. Poon .....	171
<b>Microwave Resonators for Weak Light Detection at Telecom Wavelength</b>	
Pin-Jia Zhou, Yiwen Wang, Qiang Wei, and Lian-Fu Wei .....	183
<b>Human Body as Antenna and Its Effect on Human Body Communications</b>	
Behailu Kibret, Assefa K. Teshome, and Daniel T. H. Lai .....	193
<b>A Differential DPSM Based Modeling Applied to Eddy Current Imaging Problems</b>	
Thierry Bore, Pierre-Yves Joubert, and Dominique Placko .....	209
<b>Investigation of Wireless Power Transfer Using Planarized, Capacitor-Loaded Coupled Loops</b>	
Chenchen Jimmy Li and Hao Ling .....	223
<b>Multiband Frequency Reconfigurable 4G Handset Antenna with MIMO Capability</b>	
Janne Ilvonen, Risto Valkonen, Jari Holopainen, and Ville Viikari .....	233