

APPLIED COMPUTATIONAL ELECTROMAGNETICS SOCIETY JOURNAL

April 2016
Vol. 31 No. 4
ISSN 1054-4887

The ACES Journal is abstracted in INSPEC, in Engineering Index, DTIC, Science Citation Index Expanded, the Research Alert, and to Current Contents/Engineering, Computing & Technology.

The illustrations on the front cover have been obtained from the research groups at the Department of Electrical Engineering, The University of Mississippi.

THE APPLIED COMPUTATIONAL ELECTROMAGNETICS SOCIETY

<http://aces-society.org>

EDITOR-IN-CHIEF

Atef Elsherbeni

Colorado School of Mines, EECS Dept.
Golden, CO 80401, USA

ASSOCIATE EDITORS-IN-CHIEF

Sami Barmada

University of Pisa. ESE Dept.
Pisa, Italy, 56122

Mohamed Bakr

McMaster University, ECE Dept.
Hamilton, ON, L8S 4K1, Canada

Antonio Musolino

University of Pisa
56126 Pisa, Italy

Mohammed Hadi

Kuwait University, EE Dept.
Safat, Kuwait

Abdul Arkadan

Marquette University, ECE Dept.
Milwaukee, WI 53201, USA

Marco Arjona López

La Laguna Institute of Technology
Torreon, Coahuila 27266, Mexico

Alistair Duffy

De Montfort University
Leicester, UK

Paolo Mezzanotte

University of Perugia
I-06125 Perugia, Italy

EDITORIAL ASSISTANTS

Matthew J. Inman

University of Mississippi, EE Dept.
University, MS 38677, USA

Shanell Lopez

Colorado School of Mines, EECS Dept.
Golden, CO 80401, USA

EMERITUS EDITORS-IN-CHIEF

Duncan C. Baker

EE Dept. U. of Pretoria
0002 Pretoria, South Africa

Ahmed Kishk

Concordia University, ECS Dept.
Montreal, QC H3G 1M8, Canada

Allen Glisson

University of Mississippi, EE Dept.
University, MS 38677, USA

Robert M. Bevensee

Box 812
Alamo, CA 94507-0516, USA

David E. Stein

USAF Scientific Advisory Board
Washington, DC 20330, USA

EMERITUS ASSOCIATE EDITORS-IN-CHIEF

Yasushi Kanai

Niigata Inst. of Technology
Kashiwazaki, Japan

Alexander Yakovlev

University of Mississippi, EE Dept.
University, MS 38677, USA

Levent Gurel

Bilkent University
Ankara, Turkey

Ozlem Kilic

Catholic University of America
Washington, DC 20064, USA

Erdem Topsakal

Mississippi State University, EE Dept.
Mississippi State, MS 39762, USA

Fan Yang

Tsinghua University, EE Dept.
Beijing 100084, China

EMERITUS EDITORIAL ASSISTANTS

Khaled ElMaghoub
Trimble Navigation/MIT
Boston, MA 02125, USA

Christina Bonnington
University of Mississippi, EE Dept.
University, MS 38677, USA

Anne Graham
University of Mississippi, EE Dept.
University, MS 38677, USA

Mohamed Al Sharkawy
Arab Academy for Science and Technology, ECE Dept.
Alexandria, Egypt

APRIL 2016 REVIEWERS

Mahmoud Abdipour
Danial Abdorahimi
Hulusi Acikgoz
Ahmad Al-Shaheen
Juha Ala-Laurinaho
Mohammad Alibakhshi Kenari
Marco Arjona
Septimiu Balascuta
Kishore Balasubramanian
Sami Barmada
Thomas Bolin
Lahcene Boukelkoul
Ahmed Boutejdar
Eduard Costa
Angela Coves
Tiejun Cui
Sisir Das
Alistar Duffy
Ismatullah Ismatullah
Shambhu Jha
Yasushi Kanai

Ashutosh Kedar
William Kefauver
George Kyriacou
Mondher Labidi
Jaroslav Lacik
Yingsong Li
Jian Liu
Zahéra Mekkioui
Antonio Moreira
Javier Moreno Garrido
Antonino Musolino
Romain Pierrat
Pedro Pinho
Mirco Raffetto
Mohammad Ranjbar Nikkhah
Kamalesh Sainath
Rashid Saleem
Theodoros Samaras
Hugh Sasse
Sellakkutti Suganthi
Christopher Trueman

**THE APPLIED COMPUTATIONAL ELECTROMAGNETICS SOCIETY
JOURNAL**

Vol. 31 No. 4

April 2016

TABLE OF CONTENTS

A Multiscale Algorithm for Eddy-Current Nondestructive Evaluation Based On Volume-Integral Equations: Initial Concepts R. Kim Murphy, Harold A. Sabbagh, and Elias H. Sabbagh.....	333
Wire Fault Diagnosis Based on Time-Domain Reflectometry and Backtracking Search Optimization Algorithm Hamza Boudjefdjouf, Housseem R. E. H. Bouchekara, Francesco de Paulis, Mostafa K. Smail, Antonio Orlandi, and Rabia Mehasni	340
Compact UWB Antenna with Triple Band-Notches Using C-Shaped and S-Shaped Structures Zhenyang Ma, Feifei Dong, Zheng Han, Shaocheng Han, and Qiannan Xue.....	348
FR4-Only Microstrip Reflectarray Antennas for 5.8 GHz Dual-Polarized Wireless Bridges Babak Honarbakhsh	355
Optimal Design of PCS Ceramic Microwave Filters using the Differential Evolution Algorithm Theodoros I. Kosmanis, Ioannis T. Rekanos, and Stelios P. Tsitsos.....	361
An Accurate High-Speed Method for Mutual Inductance Calculations of Coplanar Disk Coils Using Generalized Hypergeometric Functions Yao Luo	366
A New High Performance Hibiscus Petal Pattern Monopole Antenna for UWB Applications Md. Zulfiker Mahmud, Salehin Kibria, Md. Samsuzzaman, Norbahiah Misran, and Mohammad T. Islam.....	373
A Planar Monopole Antenna with Switchable Dual Band-Notched UWB/Dual-Band WLAN Applications Mohammad M. Fakharian, Pejman Rezaei, and Vahid Sharbati.....	381
Ultra-Wideband Planar Antenna with Notched Bands at 3.5/5.5 GHz Rezaul Azim and Mohammad T. Islam	388
Design of a Compact Wideband Balun Bandpass Filter with High Selectivity Hui Ma, Jiayuan Lu, Yuran Li, Lin Liu, and Jianpeng Wang	396

Novel Compact Branch-Line Coupler Using Non-Uniform Folded Transmission Line and Shunt Step Impedance Stub With Harmonics Suppressions Shalaleh Nouri, Javad Nourinia, Nooshin Valizade, Bahman Mohammadi, and Arash Valizade.....	401
CPW Dependent Loss Analysis of Capacitive Shunt RF MEMS Switch Santhanam Suganthi, Karuppusamy Murugesan, and Singaravelu Raghavan	410
Dual Band and Dual Mode Microstrip Antenna for Body Centric Wireless Communication Seiran Khaledian and Zahra Atlasbaf	417
A Novel Coupling Structure for Changing the Coupling Nature Between TE ₀₁ delta -mode Dielectric Resonator and Compline Resonator Bin Yu, Bao-Fu Jia, and Zhao-Jun Zhu	423
The Substrate Integrated Waveguide T-junction Power Divider with Arbitrary Power Dividing Ratio Asrin Piroutiniya and Pejman Mohammadi.....	428
Small Wearable Meta Materials Antennas for Medical Systems Albert Sabban.....	434
A Hybrid Explicit-Implicit Scheme for Spectral-Element Time-Domain Analysis of Multiscale Simulation Hao Xu, Dazhi Z. Ding, and Rushan Chen.....	444
Broadband CRLH Beam Scanning Leaky-Wave Antenna Designed on Dual-Layer SIW Mohsen Niayesh and Zahra Atlasbaf.....	450
Evaluation of E-Field Distribution and Human Exposure for a LTE Femtocell in an Office Hsing-Yi Chen and Shu-Huan Wen.....	455
Light-Weight Wide-Band Metal-Only Reflectarray Antennas Babak Honarbakhsh	468