

**APPLIED
COMPUTATIONAL
ELECTROMAGNETICS
SOCIETY
JOURNAL**

July 2015
Vol. 30 No. 7
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, EE Dept.
Pisa, Italy, 56126

Mohammed Hadi

Kuwait University, EE Dept.
Safat, Kuwait

Paolo Mezzanotte

University of Perugia
I-06125 Perugia, Italy

Yasushi Kanai

Niigata Inst. of Technology
Kashiwazaki, Japan

Alistair Duffy

De Montfort University
Leicester, UK

Antonio Musolino

University of Pisa
56126 Pisa, Italy

Ozlem Kilic

Catholic University of America
Washington DC, 20064, USA

Mohamed Bakr

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

Marco Arjona López

La Laguna Institute of Technology
Coahuila 27266, Mexico

Fan Yang

Tsinghua University, EE Dept.
Beijing 100084, China

Abdul Arkadan

Rafik Hariri University
Chouf 2010, Lebanon

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

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

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

Mohamed Abouzahra

MIT Lincoln Laboratory
Lexington, MA, USA

Erdem Topsakal

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

Levent Gurel

Bilkent University
Ankara, Turkey

Alexander Yakovlev

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

EMERITUS EDITORIAL ASSISTANTS

Khaled ElMaghoub

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

JULY 2015 REVIEWERS

Ahmed Attiya
Nagavel Balasubramaniam
Mohammadreza Barzegaran
Zhipeng Cao
Klaus Debes
Nebojsa Doncov
Mojtaba Fallahpour
Simone Genovesi
Anders Hook
Amir Jafargholi
Achraf Jaoujal
Saughar Jarchi
Zhiping Li
Ricardo Matias
Bahman Mohammadi

Shahram Mohanna
Mohammad Naser-Moghadasi
Zaiping Nie
Andrew Peterson
P. Sampath
Harvey Schuman
Apirat Siritaratiwat
Chalasan Subba Rao
Jianwen Tan
Christopher Trueman
Arash Valizade Shahmirzadi
Wei-Chung Weng
Stephen Yan
Mohammad Yazdani-Asrami
Yasemin Oner

THE APPLIED COMPUTATIONAL ELECTROMAGNETICS SOCIETY
JOURNAL

Vol. 30 No. 7

July 2015

TABLE OF CONTENTS

“Questioning Degree of Accuracy Offered by the Spectral Element Method in Computational Electromagnetics” I. Mahariq, H. Kurt, and M. Kuzuoğlu	698
“Interaction Between 3-T MRI Systems and Patients with an Implanted Pacemaker” S. Pisa and E. PiuZZi	706
“Fast Design of Jerusalem-Cross Parameters by Equivalent Circuit Model and Least-Square Curve Fitting Technique” H-Y. Chen, T-H. Lin, and P-K. Li	717
“Pole Arc Skewing Analysis of Synchronous Reluctance Machine Using Discrete Method Combined with Winding Function Approach” P. Naderi and A. Shiri	731
“An Improved IEM2Mc Model for Surface Bistatic Scattering” W. Zheng, Y. Leng, and Q. Li	740
“A Novel Slot Antenna with Reconfigurable Meander-Slot DGS for Cognitive Radio Applications” M. M. Fakharian, P. Rezaei, and A. A. Orouji	748
“Design and Optimization of a CPW-Fed Tri-Band Patch Antenna Using Genetic Algorithms” K. Fertas, H. Kimouche, M. Challal, H. Aksas, R. Aksas, and A. Azrar	754
“Narrow Band, Sharp Roll-Off Rejection Frequency Selective Surface Based on Substrate Integrated Waveguide” M. Shamaei Samani, R. Sarraf Shirazi, and G. Moradi	760
“Hybrid MLFMA/MLACA for Analysis of Electromagnetic Scattering from Inhomogeneous High-Contrast Objects” Y. L. Hu, Z. H. Fan, D. Z. Ding, and R. S. Chen.....	765
“Octave-Band Monopole Antenna with a Horseshoe Ground Plane for Wireless Communications” M. M. Abdollahi, N. Ojaroudi, M. Mehranpour, and F. Ghiasvand	773

“Compact Wideband Bandpass Filter Using Improved Triple-Mode Resonator with Broad Upper Stopband” D. Li, Y. Zhang, K. Xu, K. Song, and J. L-W. Li.....	779
“A Parallel Implementation for the Time-Domain Analysis of a Rectangular Reflector Antenna Using OpenMP” G. M. Sami and K. Ragab.....	785
“A New Design of Cell Phone Body for the SAR Reduction in the Human Head” M. I. Hossain, M. R. I. Faruque, and M. T. Islam	792
“A New Multifractal Geometry for Design of Frequency Selective Surfaces with Dual Band Response” E. C. Braz and A. L. P. S. Campos	799
“Analysis of Edge Terminated Wide Band Biconical Antenna” C. Subba Rao and A. Sudhakar.....	804