

APPLIED COMPUTATIONAL ELECTROMAGNETICS SOCIETY JOURNAL

February 2016
Vol. 31 No. 2
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

Mohammed Hadi
Kuwait University, EE Dept.
Safat, Kuwait

Alistair Duffy
De Montfort University
Leicester, UK

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

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

Paolo Mezzanotte
University of Perugia
I-06125 Perugia, Italy

Antonio Musolino
University of Pisa
56126 Pisa, Italy

Marco Arjona López
La Laguna Institute of Technology
Torreón, Coahuila 27266, Mexico

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

Duncan C. Baker
EE Dept. U. of Pretoria
0002 Pretoria, South Africa

Robert M. Bevensee
Box 812
Alamo, CA 94507-0516, USA

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

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

David E. Stein
USAF Scientific Advisory Board
Washington, DC 20330, USA

EMERITUS ASSOCIATE EDITORS-IN-CHIEF

Yasushi Kanai
Niigata Inst. of Technology
Kashiwazaki, Japan

Levent Gurel
Bilkent University
Ankara, Turkey

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

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

Ozlem Kilic
Catholic University of America
Washington, DC 20064, 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

FEBRUARY 2016 REVIEWERS

Ramin Aghajafari
Amirhossein Askarian
Emine Avsar Aydin
Toure Baidy
Chandra Bajracharya
Mohamed Bakr
Sami Barmada
Wendell Brokaw
Zhipeng Cao
Deb Chatterjee
Nan-Wei Chen
Teng-Kai Chen
Shi Cheng
Dajun Cheng
Prasad Chhapkhane
Paolo Corona
Eduard Costa
Angela Coves

Mostafa Haghi
Shian Hwu
George Kyriacou
Zi-Liang Liu
Mohd Hafizuddin Mat
Ali Mehrdadian
Rashid Mirzavand
Antonino Musolino
Azzeddin Naghar
Alireza Namadmalan
Mohammad Naser-Moghadasi
Anthony Pendurthy
Andrew Peterson
Stefano Selleri
Yasuhiro Tsunemitsu
Cheng-Fu Yang
Yifan Zhang
Bo Zhao

THE APPLIED COMPUTATIONAL ELECTROMAGNETICS SOCIETY
JOURNAL

Vol. 31 No. 2

February 2016

TABLE OF CONTENTS

Microwave Imaging Using Synthetic Radar Scheme Processing for the Detection of Breast Tumors Abdullah K. Alqallaf, Rabie K. Dib, and Samir F. Mahmoud	98
Probe Position Errors Corrected Near-Field – Far-Field Transformation with Spherical Scanning Francesco D'Agostino, Flaminio Ferrara, Claudio Gennarelli, Rocco Guerriero, and Massimo Migliozi.....	106
Dissipation Factor and Permittivity Estimation of Dielectric Substrates Using a Single Microstrip Line Measurement Ricardo Gonçalves, Roberto Magueta, Pedro Pinho, and Nuno B. Carvalho	118
Improvements in DNA Biosensors Using Joint Split Ring Resonators Coupled with Thin Film Microstrip Line Mohammad Abdolrazzaghi, Ali Abdolali, and Soheil Hashemy	126
New Compact Dual Bandpass Filter Using Coupled Double-Ring Resonators and DGS-Technique Ahmed Boutejdar, Nuri M. Eltabit, Ahmed A. Ibrahim, Edmund P. Burte, and Mahmoud A. Abdalla.....	132
Resonant and Radiation Characteristics of Rectangular Microstrip Patch Antenna on Suspended-Composite Substrates Sami Bedra and Tarek Fortaki	138
Combined PSO-FDFD Optimization of Rectangular Ridged Waveguides Marco Simone, Alessandro Fanti, Giorgio Montisci, Giovanni A. Casula, and Giuseppe Mazzarella.....	144
Narrow-band Bandpass Filters with Improved Upper Stopband Using Open/Shorted Coupled Lines Wenjie Feng, Meiling Hong, and Wenquan Che	152
A New Design of Very Compact UWB Band-Stop Filter Using Coupled W-Shaped Strips Houman Akbarzadeh, Nasser Ojaroudi, and Yasser Ojaroudi	159

Electromagnetic Beam Position Monitoring Model for Particle Energy Linear Accelerator Sabir Hussain, Alistair Duffy, and Hugh Sasse	164
Design and Electromagnetic Analysis of a New Rotary-Linear Switched Reluctance Motor in Static Mode Mohammad M. Nezamabadi, Ebrahim Afjei, and Hossein Torkaman.....	171
Design and Non-Linear Modeling of a Wide Tuning Range Four-Plate MEMS Varactor with High Q-Factor for RF Application Mehrdad Moradi, Reze S. Shirazi, and Abdolali Abdipour.....	180
Characterization of Surface Cracks Using Eddy Current NDT Simulation by 3D-FEM and Inversion by Neural Network Bachir Helifa, Mouloud Féliachi, Ibn K. Lefkaier, Fouad Boubenider, Abdelhalim Zaoui, and Nasreddine Lagraa	187
Nonlinear Modelling Approach for Linear Switched Reluctance Motor and its Validation by Two Dimensional FEA Imed Mahmoud, Mourad Fathallah, and Habib Rehaoulia.....	195
Utilization of Protruded Strip Resonators to Design a Compact UWB Antenna with WiMAX and WLAN Notch Bands Jalil Mazloum and Nasser Ojaroudi.....	204