

# IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES

A PUBLICATION OF THE IEEE MICROWAVE THEORY AND TECHNIQUES SOCIETY



AUGUST 2016

VOLUME 64

NUMBER 8

IETMAB

(ISSN 0018-9480)

**MINI-SPECIAL ISSUE ON 2015 IEEE INTERNATIONAL CONFERENCE ON NUMERICAL  
ELECTROMAGNETIC AND MULTIPHYSICS MODELING AND OPTIMIZATION (NEMO2015)  
FOR RF, MICROWAVE, AND TERAHERTZ APPLICATIONS**

Guest Editorial .....	<i>Z. Chen</i>	2369
MINI-SPECIAL ISSUE PAPERS		
Matrix-Free Time-Domain Method for General Electromagnetic Analysis in 3-D Unstructured Meshes—Modified-Basis Formulation .....	<i>J. Yan and D. Jiao</i>	2371
Modeling Lumped Sources in the Finite-Difference Time-Domain Method of the Scattered-Field Formulation .....	<i>J. E. Roy</i>	2383
The Generalized 2.5-D Finite-Element Method for Analysis of Waveguide Components .....	<i>G. G. Gentili, L. Accatino, and G. Bertin</i>	2392
Mode-Matching Design of Substrate Mounted Waveguide (SMW) Components .....	<i>J. Schorer, J. Bornemann, and U. Rosenberg</i>	2401
Direct Mesh-Based Model Order Reduction of PEEC Model for Quasi-Static Circuit Problems .....	<i>Y. Dou and K.-L. Wu</i>	2409
Passive Reduced Order Macromodeling Based on Loewner Matrix Interpolation .....	<i>M. T. Kassis, M. Kabir, Y. Q. Xiao, and R. Khazaka</i>	2423
Multidimensional Uncertainty Quantification of Microwave/RF Networks Using Linear Regression and Optimal Design of Experiments .....	<i>A. K. Prasad, M. Ahadi, and S. Roy</i>	2433
Revisiting the Effect of Nickel Characteristics on High-Speed Interconnect Performance .....	<i>Y. Tao and F. H. Scharf</i>	2447
Rapid Simulation-Driven Multiobjective Design Optimization of Decomposable Compact Microwave Passives .....	<i>S. Koziel and A. Bekasiewicz</i>	2454
REGULAR PAPERS		
<b>EM Theory and Analysis Techniques</b>		
Rotating References for the Time-Domain Analysis of Magnetized Ferrites .....	<i>A. Benouatas</i>	2462
Coupled Electromagnetic and Heat Transfer ODE Model for Microwave Heating With Temperature-Dependent Permittivity .....	<i>J. Zhong, S. Liang, Y. Yuan, and Q. Xiong</i>	2467

(Contents Continued on Back Cover)



---

A New Linear Distorted-Wave Inversion Method for Microwave Imaging via Virtual Experiments .....	2478
..... <i>L. Di Donato, R. Palmeri, G. Sorbello, T. Isernia, and L. Crocco</i>	
Near-Field Orthogonality Sampling Method for Microwave Imaging: Theory and Experimental Verification .....	2489
..... <i>M. N. Akıncı, M. Çayören, and İ. Akduman</i>	
<b>Devices and Modeling</b>	
A Design Approach for Tapered Waveguide to Substrate-Integrated Waveguide Transitions .....	2502
..... <i>C. Rave and A. F. Jacob</i>	
On the Modeling, Characterization, and Analysis of the Current Distribution in PCB Transmission Lines With Surface Finishes .....	2511
..... <i>B. Curran, G. Fotheringham, C. Tschoban, I. Ndip, and K.-D. Lang</i>	
An Artificial Neural Network-Based Electrothermal Model for GaN HEMTs With Dynamic Trapping Effects Consideration .....	2519
..... <i>A.-D. Huang, Z. Zhong, W. Wu, and Y.-X. Guo</i>	
<b>Passive Circuits</b>	
Analysis of Compact Triple-Mode Ceramic Cavity Filters Using Parallel-Coupled Resonators Approach .....	2529
..... <i>D. R. Hendry and A. M. Abbosh</i>	
Quarter-Mode Cavity Filters in Substrate Integrated Waveguide Technology .....	2538
..... <i>S. Moscato, C. Tomassoni, M. Bozzi, and L. Perregrini</i>	
Reconfigurable Planar Capacitive Coupling in Substrate-Integrated Coaxial-Cavity Filters .....	2548
..... <i>A. Anand and X. Liu</i>	
Ultra Compact Inline <i>E</i> -Plane Waveguide Bandpass Filters Using Cross Coupling .....	2561
..... <i>N. Mohottige, O. Glubokov, U. Jankovic, and D. Budimir</i>	
<i>W</i> -Band Waveguide Filters Fabricated by Laser Micromachining and 3-D Printing .....	2572
..... <i>X. Shang, P. Penchev, C. Guo, M. J. Lancaster, S. Dimov, Y. Dong, M. Favre, M. Billod, and E. de Rijk</i>	
Compact, Low Insertion-Loss, and Wide Stopband HTS Diplexer Using Novel Coupling Diagram and Dissimilar Spiral Resonators .....	2581
..... <i>X. Guan, F. Yang, H. Liu, Z. Ma, B. Ren, W. Huang, and P. Wen</i>	
Switched Allpass-to-Bandstop Absorptive Filters With Constant Group Delay .....	2590
..... <i>A. C. Guyette, E. J. Naglich, and S. Shin</i>	
Broadband Integrated $8 \times 8$ Butler Matrix Utilizing Quadrature Couplers and Schiffman Phase Shifters for Multibeam Antennas With Broadside Beam .....	2596
..... <i>K. Wincza and S. Gruszczynski</i>	
<b>Hybrid and Monolithic RF Integrated Circuits</b>	
A Quasi-Doherty SOI CMOS Power Amplifier With Folded Combining Transformer .....	2605
..... <i>K. Kim, D.-H. Lee, and S. Hong</i>	
Optimized Ultralow-Power Amplifier for OOK Transmitter With Shaped Voltage Drive .....	2615
..... <i>D. Jeong, H. Lee, T. Chung, S. Lee, J. Lee, and B. Kim</i>	
Two 122-GHz Phase-Locked Loops in 65-nm CMOS Technology ....	2623
..... <i>N. Kim, K. Song, J. Yun, J. Yoo, and J.-S. Rieh</i>	
<b>Instrumentation and Measurement Techniques</b>	
One-Port Direct/Reverse Method for Characterizing VNA Calibration Standards .....	2631
..... <i>R. A. Monsalve, A. E. E. Rogers, T. J. Mozdzen, and J. D. Bowman</i>	
Extending the Characterization Bandwidth of Dynamic Nonlinear Transmitters With Application to Digital Predistortion .....	2640
..... <i>S. Bensmida, O. Hammi, A. Kwan, M. S. Sharawi, K. A. Morris, and F. M. Ghannouchi</i>	
<b>RF Systems and Applications</b>	
Optimization and Design of Small Circular Coils in a Magnetically Coupled Wireless Power Transfer System in the Megahertz Frequency .....	2652
..... <i>D.-H. Kim, J. Kim, and Y.-J. Park</i>	
A Compact 60-GHz Wireless Power Transfer System .....	2664
..... <i>M. Nariman, F. Shirinfar, A. Papió Toda, S. Pamarti, A. Rofougaran, and F. De Flaviis</i>	
Broadband Explicit Time Domain Model for Human Skin Permittivity .....	2678
..... <i>R. Mohammadi-Baghaee and J. Rashed-Mohassel</i>	
Design of Pulse Characteristics for Near-Field UWB-SAR Imaging .....	2684
..... <i>D. Oloumi, J.-W. Ting, and K. Rambabu</i>	

---