

2023 International Workshop on Antenna Technology (iWAT 2023)

**Aalborg, Denmark
15 – 17 May 2023**



**IEEE Catalog Number: CFP23ATS-POD
ISBN: 979-8-3503-3409-8**

**Copyright © 2023 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP23ATS-POD
ISBN (Print-On-Demand):	979-8-3503-3409-8
ISBN (Online):	979-8-3503-3408-1

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

TABLE OF CONTENTS

2.5D Inductive Intertwined Frequency Selective Surface for Pass-Band Applications	1
<i>Juan A. Vásquez-Peralvo, Juan Carlos Merlano Duncán, Jorge Luis González-Rios, Symeon Chatzinotas</i>	
5G Millimeter-Wave Dual-Band Beamforming Antenna and Wireless Link Tests	4
<i>Yejune Seo, Jiyeon Jang, Yejine Lee, Jaewon Koh, Sungtek Kahng</i>	
Analysis Results of Single-Layered Reflectarray Antenna with Branch Elements	8
<i>Masayoshi Takao, Ryusei Yamada, Shigeru Makino, Shin-Ichi Yamamoto, Yasuhiro Nishioka</i>	
A Wave Physics Approach to Electronically Steerable Antennas	11
<i>Xhoandri Lleshi, Luca Santamaria, Guillaume Courtin, Jean-Baptiste Gros, Mikhail Odit, Uladzislau Papou, Mathieu Durant, Elie Mokbel, Nicolas Le Hir, Geoffroy Lerosey</i>	
Applications of Artificial Dielectric Layers for mm-Wave Antennas	12
<i>Daniele Cavallo</i>	
Over-The-Air Automotive Radar System Testing	16
<i>Gerhard F. Hamberger, Maximilian Bogner, Steffen Neidhardt, Matthias Beer</i>	
Aperture-Coupled Bowtie Patch Antenna Design for Autonomous Driving Applications	19
<i>Lazaros A. Iliadis, Achilles D. Boursianis, Vasileios P. Rekkas, Zaharias D. Zaharis, Stavros Koulouridis, Sotirios K. Goudos</i>	
Broadband Dual-Polarized Vivaldi Base Station Array Antenna for 5G Smart Networks	23
<i>Abdenasser Lamkaddem, Edel Merino, Ahmed El Yousfi, Vicente Gonzalez-Posadas, Daniel Segovia-Vargas</i>	
A Calibration Procedure for Two-Antenna Direction of Arrival Finding Systems	26
<i>Adelaida Heiman, Razvan D. Tamas</i>	
X-Band Circularly Polarized Antenna for CubeSat Communication	29
<i>Saeid Karamzadeh</i>	
W-Band Comb-Line Array Antenna for Wind Turbine Blade Clearance Detection	32
<i>Jiayi Chen, Yitong Jin, Guangli Yang, Yong Luo</i>	
A Compact Hybrid Liquid Antenna for Wi-Fi Applications	36
<i>Viswanadh Raviteja Gudivada, Yi Huang, Hanyang Wang, Yu Chan Yang, Elliot L. Bennett</i>	
Comparison of Additively Manufactured Dual-Polarized Probe Antennas at Ku-Band	38
<i>Sabin Kumar Karki, Juha Ala-Laurinaho, Ville Viikari</i>	
Connected Dipole Antenna Cluster of Enhanced Spherical Coverage CDF for mm-Wave Applications	42
<i>Quangang Chen, Juha Ala-Laurinaho, Alexander Khripkov, Janne Ilvonen, Resti Montoya Moreno, Ville Viikari</i>	
Contactless Sensing Using Intelligent Walls	46
<i>Jalil Ur Rehman Kazim, James Rains, Muhammad Ali Imran, Qammer H. Abbasi</i>	
The Potential of Context-Aided Communications	48
<i>Hao Guo, Tommy Svensson</i>	

Convex Body-Surface Curvature Influence on the On-Body Path Gain - A Numerical Investigation	51
<i>Jonas Ørnskov Nielsen, Søren Helstrup Kvist, Kaj Bjarne Jakobsen</i>	
MmWave Mobile Devices with Reconfigurable Broadside and Endfire Radiation Using Shared Aperture Antenna-on-Display and Antenna-in-Package.....	54
<i>Bumhyun Kim, Dongseop Lee, Wonbin Hong</i>	
Millimeter Wave Dielectric Resonator Antenna for Off-Body Communications with Grooved GP	58
<i>Tarek S. Abdou, Salam K. Khamas</i>	
A Broadband Dipole Antenna Implemented with Solar Cell.....	62
<i>Ahmed Ali, Heesu Wang, Ikmo Park</i>	
Balanced Duplex Filtering Dielectric Resonator Antenna with High Isolation Performance.....	65
<i>Hongliang Tian, Haiwen Liu, Mo Huang</i>	
Electrically Small VHF Monopole Antenna for Mobile Handset Application Using Magneto-Dielectric Material.....	69
<i>Thomas Finet, Ala Sharaiha, Anne-Claude Tarot, Hanadi Breiss, Patrick Pottier, Jean-Luc Mattei, Cyrille Le Meins, Philippe Pouliguen</i>	
Fast Prototyping of an L-Band Array Using Additive and Subtractive Techniques	72
<i>Songyi Yen, Ljubodrag B. Boskovic, Gaeron R. Friedrichs, Dejan S. Filipovic, Erik Lier, Thomas H. Hand, W. Neill Kefauver</i>	
Filtering Metasurface Lens for Chip-to-Chip Communications in Multicore Multichip Systems	76
<i>Hossein Sarbandi Farahani, Behrooz Rezaee, Wolfgang Bösch</i>	
High Speed and Resilient Wireless Interconnects in the Near Field.....	80
<i>Mauro Ettore, David González Ovejero</i>	
Human-Aware Beamforming Method Based on Electromagnetic Field Strength Estimation.....	84
<i>Haruki Yamamoto, Kyoshiro Muramatsu, Kentaro Murata, Naoki Honma</i>	
Impact of Antenna Array Arrangement on MIMO Radar for Human Identification Application.....	87
<i>Naoki Honma, Teppei Hayashi, Nobuyuki Shiraki, Kentaro Murata, Takeshi Nakayama, Shoichi Izuka</i>	
Integratable Antenna Concepts Based on Conformal Antennas for 3D Radar Systems	91
<i>Christian Bernd Tschoban, Harald Pötter, Seyyid Dilek, Ivan Ndip, Martin Schneider-Ramelow</i>	
Integration of Secure Key Generation and Data Encrypted Communication in Wireless Environment	97
<i>Xuetong Chen, Xinran Huang, Liuming Zhang, Xuelin Yang</i>	
Large-Aperture Cavity-Excited Metagrating Antennas for Dynamic Beam Switching.....	101
<i>Fengming Hu, Ariel Epstein</i>	
Large-Scale Tri-Modal Electromagnetic Structure for Ambient RF Energy Harvesting.....	105
<i>Chi-Yuk Chiu, Charles Ng, Ross Murch</i>	
A Dielectric Lens Antenna with Reconfigurable Scanning Beams for K-Band Wind Profile Radar.....	109
<i>Lei Yan, Kaihong Zheng, Guangli Yang, Yong Luo</i>	
A Low-Profile Light-Weight Ultra-Wideband Tightly Coupled Array for Sub-6 GHz Applications	113
<i>De-Ming Sun, Zhang-Cheng Hao, Wen-Ye Liu</i>	

Link Budget Considerations for Reflecting Intelligent Surfaces in Radio Channels.....	116
<i>Axel Hoffmann, Dirk Manteuffel</i>	
Liquid-Dielectric-Based Patch Antenna with Polarization and Frequency Reconfiguration.....	120
<i>Guangwei Yang, Dimitra Psychogiou</i>	
A Low-Profile Dual-Band Antenna with Even- And Odd-Mode Resonances for 5G Mobile Applications.....	124
<i>Long Qian, Xiaodong Chen, Hanyang Wang, Hai Zhou, Meng Hou</i>	
Antenna Materials Development in Automotive Radars	127
<i>Junko Konishi, Ho Wook Choi, Qiang Wei</i>	
Maximum Gain of an Electrically Small Cosines-Dipole-Based End-Fire Array	130
<i>Alessio Tornese, Antonio Clemente, Christophe Delaveaud</i>	
Low-Cost Metagratings for Efficient Anomalous Reflection	134
<i>Oz Diker, Ariel Epstein</i>	
Metasurface 2-D Leaky-Wave Antennas Fed by Multiple Sources	138
<i>D. Comite, P. Baccarelli, P. Burghignoli, A. Galli, V. Gómez-Guillamón Buendía, M. Kuznetsov, I. Shahzadi, S. K. Podilchak</i>	
A Simple Decoupling Method for Millimeter-Wave Aperture-Coupled Patch Antenna Arrays	141
<i>Yi-Ming Zhang, Xu Li, Shao-Qiu Xiao</i>	
Novel Techniques Applied to MIMO Antenna Array for 5G Sub-7 GHz Smartphone Applications	144
<i>Chow-Yen-Desmond Sim</i>	
On the Impact of an Antenna Field of View on the Classification of UAVs.....	146
<i>Ahmed N. Sayed, Hajar Abedi, Omar M. Ramahi, George Shaker</i>	
On-Chip mmWave Slot Antenna Arrays with Improved Radiation Efficiency	148
<i>Seung Yoon Lee, Nima Ghalichechian</i>	
Optical Antenna Array for 6G	152
<i>Hiroyuki Arai</i>	
Multi-Objective Optimization for Efficient End-Fire Superdirective Array Design	154
<i>Abdellah Touhami, Sylvain Collardey, Ala Sharaiha</i>	
Phased Multibeam Antennas Employing Generalized Joined Coupler Matrix.....	158
<i>Y. Jay Guo</i>	
Prephase Method for 1-Bit Phase Compensation Single-Beam Scanning Reflective Metasurface Design.....	161
<i>Jiexi Yin, Zhi Ning Chen, Haiming Wang, Qi Wu, Zwick Thomas</i>	
A 2-30-GHz MFCW Radar for Vital Sign Detection Using Variable Carrier Frequencies.....	164
<i>Tian-Wei Huang, Ti-Yu Chao, Yi-Hsien Lin, Kai-Jie Chuang, Chien Chen, Jeng-Han Tsai</i>	
Reconfigurable Antenna with Circular Polarization on Dual WiMAX Bands Based on Liquid Metal Switching Capability	166
<i>Vahid Sharbati, Xiulong Bao, John J. Healy, Nan Zhang</i>	
Reflectarrays for CubeSat Applications.....	170
<i>Tonny Rubæk, Erik Jørgensen, Min Zhou, Andreas Ericsson, Mustafa Murat Bilgic</i>	

A Wide-Beam Dielectric Resonator Antenna Based on Complementary Excitation Source.....	174
<i>Qiang Sun, Yong-Ling Ban</i>	
Robust On-Body Antenna Based on Discretized Planar Surfaces	178
<i>Riku Kormilainen, Konsta Langi, Anu Lehtovuori, Ville Viikari</i>	
Scattering Performances of Metasurfaces Affected by Electromagnetic Phase Roughness	182
<i>L. Stefanini, D. Ramaccia, A. Monti, Z. H.-Zarghani, M. Khalid, A. Toscano, F. Bilotti, S. Vellucci, M. Longhi, M. Barbuto</i>	
Reconfigurable Surfaces in Reverberation Chambers for Over-the-Air Mobile Device Testing.....	185
<i>Michael A. Jensen, Benjamin T. Arnold, Matthew D. Arnold, Rashid Mehmood</i>	
Antenna System Requirements and Challenges Towards 6G - An Industrial View.....	189
<i>Ingmar Andersson, Lars Manholm, Astrid Algaba Brazalez, Parisa Aghdam</i>	
On-Chip Terahertz Antennas and Arrays for 6G and Beyond.....	193
<i>Chi Hou Chan, Liang Gao, Shangcheng Kong, Geng-Bo Wu, Kam Man Shum, Ka Fai Chan</i>	
Transformation Optics and Prior-Knowledge-Guided Deep-Learning-Enabled Synthesis for Microwave Metalens Antennas (Keynote)	196
<i>Zhi Ning Chen</i>	
Low-Cost Transmit-Array Antenna Prototype at Ka-Band Combining Low Profile and Mechanical Wide-Angle Beam Scanning	199
<i>S. A. Matos, J. R. Costa, M. Arrebola, C. A. Fernandes, A. F. Vaquero, J. Felicio, N. J. G. Fonseca</i>	
W-Band Cavity-Backed Folded-Slot Antenna Using GaAs Integrated Passive Device Technology.....	203
<i>Jiayou Wang, Yin-Cheng Chang, Da-Chiang Chang, Shawn S. H. Hsu, Yi Huang</i>	
Reconfigurable Water-Based Antennas	206
<i>Rasmus E. Jacobsen, Samel Arslanagic</i>	
A Compact Wideband Millimeter-Wave Beam-Scanning Antenna Array for Industry 4.0 and Beyond Applications	209
<i>Abdul Jabbar, Zhibo Pang, Ghazanfar Ali Safdar, Qammer Abbasi, Muhammad Ali Imran, Masood Ur-Rehman</i>	
Wireless Channel-Adaptive Sensor-Integrated Reconfigurable Intelligent Surface Based on Deep Neural Network	213
<i>Myeonggin Hwang, Youngno Youn, Cheonga Lee, Daehyeon Kim, Donggeun An, Wonbin Hong</i>	

Author Index