


Introduction to the Summer 2022 Issue

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(Editorial)

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ABSTRACT Welcome to our July 2022 issue of IEEE JOURNAL OF MICROWAVES. This month we are back to our regular *plus* invited manuscript queue (our last issue contained only unsolicited papers). We are especially excited this month to bring you one of our special Microwave Pioneer series pieces highlighting the career and contributions of our current IEEE President, K. J. Ray Liu, with an emphasis on microwave time-reversal focusing and tracking. This is accompanied by three invited papers covering topics on microwave applications for high-Tc superconducting devices and circuits, oscillators with non-linear gain, and beamforming with metasurfaces. Our remaining regular manuscript contributions continue to provide broad outreach and significant advances in several areas. Of particular note are articles on high-gain beamforming with a scanning lens array, a MIMO radar formed from a sparse array, a holographic RFID SDMA system, several unusual filter papers, and a detailed analysis of an animal chamber for RF exposure studies. Our monthly submission and download count has remained steady and continues to bode well for our ultimate inclusion in non-IEEE databases. As of May 2022, we have received over 340 manuscripts and have an enviable usage per published article rate of 1023, putting us third out of over 272 established IEEE publications for this statistic! We are also anticipating a large pool of popular articles for our 70th Anniversary of the MTT Society special issue, which comes out in January 2023. In July, we will be introducing a special “Author Portal” that should significantly improve our author submission experience. Please continue to enjoy our new publication and consider submitting your latest research!

INDEX TERMS Editorial board, journal of microwaves, opening editorial, author portal, summer issue.

I. INTRODUCTION

In this, our third issue in Volume 2 of IEEE JOURNAL OF MICROWAVES we bring you 14 new manuscripts that are a combination of both *Invited* and *Regular* contributions. We are very pleased to report that our usage count per article published¹ is keeping us high up on the IEEE ranking for this statistic which, as of the beginning of May, sat at 1,065. This is down a bit from our 2021 total of 1,348, which placed us third out of 272 IEEE technical publications based on this statistic [1]. Our usage count is now above 160,000, and for the first time our May 2022 total exceeds that of our prior

year count for the same month – by more than 2000. We are extremely pleased to see how popular our authors are becoming!

In looking for additional metrics to help us quantify our performance as a new journal, we tried to gauge the satisfaction of our current author pool through a recidivism rate. If we count all the papers submitted to us so far (181 in late March, when I compiled the statistic), and add up the number of authors and co-authors listed on these manuscripts, there are 809 names (an average of 4.5 authors per paper, in case you are interested). Of these, however, there are only 642 unique authors. 110 author names appear more than once (i.e. they are listed on more than one paper). These 110 repeat author names appear a total of 276 times (26 authors appear on three or more papers). This leads me to conclude that our recidivism rate (number of repeat authors out of all our listed

¹Usage count is the number of times an individual article is either accessed directly online or downloaded to a user through IEEE Xplore. This usage count is recorded in the separate Publishing Operations Production Portal (POPP) Analytics database and updated at the start of each calendar month.

authors²) is 276/809 or a remarkable 34%! Given our status as a brand-new journal with only 15 months of published content, this is a very respectable percentage and implies that we must be doing something right to have so many authors send us additional manuscripts. To better track such statistics we added a “Have you or one of your co-authors submitted to IEEE JOURNAL OF MICROWAVES before,” question on our manuscript submission sequence.

On the topic of author satisfaction, in early-July we are introducing a new “Author Portal” that we hope will significantly improve the paper submission experience. For those authors who are already in the process of having a paper reviewed, please continue to use the old system. For new papers (submitted after July 4th), submitting authors please go to: <https://iee.atyponrex.com/journal/ieee-jmw> for your manuscript upload and review sequence process. The new Author Portal will track and automatically insert many of your repeated input fields, keep better statistics, and hopefully make it much easier and quicker to insert keywords, abstract text, upload reviewer or editor-specific files, and check on paper status. We will be working with authors to update and improve the input experience as we move forward.

And moving forward: Our October issue already has a large number of interesting submissions spanning the MHz to THz frequency range and we now have more than 25 committed papers for our 70th Anniversary of the MTT-S special issue [2]. However, we are still seeking both original research articles on topics of notable and widespread interest, as well as overview and historic features on both the events and the individuals that have shaped our society and the microwave field in general. If you are interested in contributing an article, please contact our special issue Guest Editor, Professor Ke Wu or our Editor-in-Chief. The due date for initial manuscripts is October 3, 2022. You can check the status of the special issue as well as the current list of committed authors at: <https://mtt.org/publications/journal-of-microwaves/70th-anniversary-issue/>.

Again, we hope more of you will decide to submit your research to us in the future and we promise to do our best to make sure your experience is the best it can be. We welcome feedback and direct communication from both our authors and readers, so do not hesitate to write to any of our Editorial Board members or to our EiC directly at any time. We promise a quick, if not a satisfying, response!

II. CONTENT

We open the IEEE JOURNAL OF MICROWAVES, volume 2, issue 3 with a very special combined *Pioneer* and *Microwaves*

²We note that it may be inaccurate to define a recidivism rate based on the total number of listed authors, but if we go by the corresponding author only or perhaps the last listed author on a group paper, this also distorts the actual repeat submission count, as often a technical group will submit multiple papers with different first or corresponding authors on each. Any co-author may also influence the decision as to where a paper is submitted. In order to get a more reproducible formula we therefore chose to use the total author list as indicated in the text. If you can suggest a better accessible statistic to use we are all “ears”!

are Everywhere editorial feature article on 2022 IEEE President K.J. Ray Liu. Although Ray Liu is a household name in the signal processing field, his most significant technical contribution actually resides in the microwave realm and involves the very interesting, and now rapidly growing field (thanks to his contributions) of time-reversal (TR) focusing. Our article covers both Professor Liu’s extremely interesting personal background, as well as his particular contributions to microwave communications applications with attention to the particular details of TR focusing.

Our first invited article this issue is from noted IEEE Fellow and prior Commonwealth Scientific and Industrial Research Organization (CSIRO) Director, Y. Jay Gao (now at Univ. of Tech., Sydney, Australia), in conjunction with post-doctoral fellow Ting Zhang at Univ. of Tech., Sydney, Australia, and Jia Du at CSIRO. The authors provide a comprehensive review of the use and performance of high-temperature superconductor devices, circuits, and systems, specifically targeted for commercial wireless communications infrastructure. Recent progress in this area is impressive and you will likely be pleased by how close we are finally coming to the use of high-T_c components in a widespread commercial application. Their paper is titled “*High-T_c Superconducting Microwave and Millimeter Devices and Circuits – An Overview.*”

Our second invited manuscript comes from noted antennas, metamaterials, and electromagnetics theorist Filippo Capolino and team at University of California, Irvine, “*High-Sensitive Parity-Time Symmetric Oscillator in Coupled Transmission Lines with Nonlinear Gain.*” This paper discusses oscillators based on a novel degeneracy that produces a double pole (EPD, or exceptional point of degeneracy) that can be used to construct coupled transmission line resonators with very high sensitivity, suitable for a variety of microwave sensing elements.

The third invited contribution this issue is from Anthony Grbic and colleagues at University of Michigan, Ann Arbor: “*Design of Planar and Conformal, Passive, Lossless Metasurfaces that Beamform.*” This paper looks at synthesizing specific beamforming characteristics using both planar and conformally shaped metasurfaces. Examples include a perfect aperture efficient metasurface antenna, a beam scanning reflect-array with controlled sidelobes, and a reflectarray using a conformal metasurface structure. Detailed synthesis and optimization techniques are discussed and examples of useful realizable structures are shown.

In “*First Demonstration of Dynamic High-Gain Beam Steering with a Scanning Lens Phased Array,*” notable antennas expert, Nuria Llombart and the group of S. Bosma, N. van Rooijen, M. Alonso-delPino, and M. Spirito at Technical University of Delft, Netherlands, describe the first demonstration of a widely scanned sparse lens array. The configuration has $\pm 20^\circ$ scan range at W-band (75–110 GHz) and grating lobe levels are below 10 dB. The concept is based on a novel waveguide-fed leaky-wave antenna construct with very high lens illumination efficiency. Measured and calculated performance are compared and agree extremely well, especially for these high frequencies.

Elias Alwan and student M.N.A. Tarek at Florida International Univ., Miami, teamed up with R. Hokayem at Silicon Labs, Montreal, Canada and M.H. Novak at Novaa Ltd., Columbus, Ohio for “*A Two-Stage Wideband RF Cancellation of Coupled Transmit Signal for Bi-Static Simultaneous Transmit and Receive System.*” This paper discusses a new self-interference suppression technique filter that provides more than 50 dB of isolation across 500 MHz of bandwidth centered between 1 and 1.5 GHz. The component implementation is aimed at improving the effectiveness of simultaneous transmit and receive systems in communications networks.

Sparse antenna arrays for automotive radars is the subject of the paper, “*Sectorized FMCW MIMO Radar by Modular Design with Non-uniform Sparse Arrays,*” by C.A. Alistarh *et al.* at Heriot-Watt University, UK, Symon K. Podilchak and John Thompson at University of Edinburgh, Scotland, and Jaesup Lee from Samsung Advanced Institute of Technology in South Korea. The manuscript describes a very broad field of view ($\pm 90^\circ$), short range, sparse array, 3-sector radar construct with 6% bandwidth at 24 GHz (scalable to 77 GHz) and 2.2° object spacing resolution.

Martin Vossiek of Friedrich-Alexander University, Erlangen-Nürnberg, Germany, continues to impress with his many excellent contributions to our journal. In this issue, he and his group provide two papers on RFID. The first, “*SAW RFID Tag Spatial Division Multiple Access Based on 3D Reflector Response Localization Using a Wideband Holographic Approach,*” discusses a method for deconvolving overlapping identification signals from close-spaced surface acoustic wave radio frequency identification tags (SAW RFID). They use a 3D holographic technique based on synthetic aperture radar to provide individual tag signal collision suppression. The technique is experimentally verified and shows great promise for direct integration into existing SAW RFID systems. In a second paper authored by Patrick Stief, Ingrid Ullmann, Georg Körner, and Konstantin Root, and Martin Vossiek, titled, “*Chipless RFID Polarimetric Radar Barcodes Encoded by Dipole Scattering Domains*” a technique for implementing a fully passive microwave polarimetric barcode-based RFID tag is presented. The novel concept uses numerous dipole antennas in prearranged geometric patterns to produce a polarization-sensitive response. The authors test the system at W-band (75-110 GHz) using an imaging radar reader. They can achieve 30-bit data readout capacity on a 45x45mm tag without the need for an active chip or otherwise powered RFID device, demonstrating the radar equivalent of an optical barcode (QR) reader.

Our next two papers involve novel uses of liquid crystal structures. In “*Reconfigurable Liquid Crystal Dielectric Image Line Leaky Wave Antenna at W-Band,*” noted microwave researcher Rolf Jakoby and students at Technical University of Darmstadt in Germany employ a liquid crystal (LC) substrate filler that can vary its permittivity (orientation of the mostly linear liquid crystal particles) through applied voltage and magnetic field. They place a linear-array based leaky wave

metallic antenna over the variable LC-filled substrate and tune the frequency varied beam angle by changing the substrate permittivity from roughly 2.5 to 3.5. Measurements at W-band confirm the concept, with demonstrated beam steering of approximately 10 degrees induced by the LC applied voltage. In a second 3D liquid crystal applications contribution also from Rolf Jakoby, this time with colleagues from Kiel University and Otto von Guericke University in Germany, a 30 GHz tunable filter design is presented. Again the liquid crystal solution is injected into a holder which can change its relative permittivity by adjusting an applied voltage or magnetic field that affects the orientation of the mostly linear LC particles inside. The LC-filled chambers are placed in a waveguide style groove gap pin filter and shown to produce a bandpass response that can be tuned by 3.5% with 2 dB insertion loss and a return loss below 20 dB at 30 GHz using less than 100 V of bias for LC reservoirs.

“*Ceramic Additive Manufactured Monolithic X-Shaped TM Dual-Mode Filter,*” from Michael Höft and student Daniel Miek at Kiel University in Germany, in conjunction with team members from Tesat Spacecom, Backnang, Germany, Lithoz GmbH, Vienna, Austria, and ESA, Noordwijk, Netherlands, present a 3D printed ceramic filter at 6 GHz. The ceramic filter has a greatly reduced volume (compared to a waveguide cavity filter) and a high-Q. 3D printing allows the filter structure to be manufactured with a very complex internal structure, in this case a 3D drooping cross design. The measured filter has very high temperature stability, low insertion loss, and a Q above 840.

In our next to last paper, we present a contribution from Kamal Samanta of Sony Europe, London, UK, and Shiban Koul and student S. De of IIT Delhi, India: “*Low Profile Dielectric Rod Tuned Reconfigurable Band Pass Filters.*” The paper describes a simply fabricated tunable band pass filter implemented in substrate integrated waveguides (SIW). Inserted and movable dielectric rods provide the variable filter bandpass characteristics. Their design procedure and realized structures represent a very cost-effective passive solution for a ubiquitous component in communications systems, and are especially intended for remote area deployment and operations.

Our final paper this issue involves extremely detailed characterization of an animal RF exposure chamber to relate the position-dependent electric field strength to the total animal exposure level. The idea is to correlate directly with the Specific Absorption Rate (SAR) and elucidate any errors. The paper, “*Quantification of Exposure Level in a Reverberation Chamber for a Large-Scale Animal Study,*” submitted by Ryota Ito of Nagoya Institute of Technology and colleagues in Japan and Korea, supports a long-term small animal toxicity study conducted in the USA on the effects of mobile phone radiation at 900 and 1900 MHz. The paper gives a measured uncertainty in the whole-body SAR derived in the USA study of 16% and also presents supporting finite difference time domain analyses for the USA study and an ongoing duplicate study being conducted jointly by groups in Japan and Korea.

This concludes our paper queue for volume 2, issue 3 of IEEE JMW. We hope you enjoy, download, and cite these manuscripts. We will return in October with an equally exciting set of regular papers, as well as several invited and special series articles that we know you will appreciate.

III. OUR EDITORIAL TEAM

Our twenty-four Topic Editors have been selected from the Chairs, Vice-Chairs, and key participants of all twenty-six active technical committees³ within the Microwave Theory and Technology Society. In addition to technical expertise and academic, governmental, and industrial backgrounds, we also have significant publications experience and leadership skills on our Editorial Board, which includes three former and three current IEEE journal Editors-in-Chief, a former MTT-S AdCom President, and twelve current and former IEEE journal Associate Editors. Our technical efforts are aided by a senior Administrative Editor, Kara McArthur, and a very experienced Assistant Editor, Sharri Shaw. Our veteran IEEE Production Editor is Joanna Gojlik. A group of us met for the first time in person at the recent Panel of Editors workshop in New Brunswick, New Jersey this past April, where we discussed our philosophy, exchanged ideas, and caught up on details relevant to our management of the journal as we move into year two. Much of our Editorial Board will also meet in person at the 2022 MTT-S International Microwave Symposium in Denver, Colorado on June 21st when we plan to hold an in person board meeting as well as an open panel session and “Get to Know our Journals” reception [3]. We hope to see some of you as well! Photos and short bios of our team can be found at the end of this editorial introduction.

ACKNOWLEDGEMENT

This quarter we would like to especially acknowledge Elsie Vega and Erin Dolan for supporting our “Get to Know Our Publications” event at the IEEE MTT-S International Microwave Symposium, and Rob Caverly (one of our own TE’s and EiC of Microwave Magazine), for helping to advertise both the IMS Publications Event and our upcoming special 70th Anniversary of the MTT Society Special Issue.

REFERENCES

- [1] P. H. Siegel, “Introduction to the spring 2022 issue,” *IEEE J. Microwaves*, vol. 2, no. 2, pp. 230–238, Apr. 2022.
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- [3] P. Siegel, “You’re Invited: Get to know our publications,” *IEEE Microw. Mag.*, vol. 23, no. 5, pp. 140–141, May 2022.

³The current 26 MTT technical committees are listed on the IEEE JOURNAL OF MICROWAVES web page: <https://mmt.org/publications/journal-of-microwaves/>, under: Editorial Board (at the very bottom of the page), and they are detailed on the MTT Society web pages under Technical Coordination Committees (<https://mmt.org/technical-committees-list/>).

EDITORIAL BOARD

EDITOR-IN-CHIEF



PETER H. SIEGEL (Life Fellow, IEEE) received the B.A. degree in astronomy from Colgate University, Hamilton, NY, USA, in 1976, and the M.S. degree in physics and the Ph.D. degree in electrical engineering from Columbia University, New York City, NY, USA, in 1978, and 1983, respectively. He has held appointments as a Research Fellow and Engineering Staff with the NASA Goddard Institute for Space Studies, New York City, NY, USA, from 1975 to 1983; a Staff Scientist with National Radio Astronomy Observatory, Central Development Labs, Charlottesville, VA, USA, from 1984 to 1986; a Technical Group Supervisor and Senior Research Scientist with Jet Propulsion Laboratory, National Aeronautics and Space Administration, Pasadena, CA, USA, from 1987 to 2014; and a Faculty Associate in electrical engineering and a Senior Scientist in biology with the California Institute of Technology (Caltech), Pasadena, CA, USA, from 2002 to 2014. At JPL, he founded and led for 25 years the Submillimeter Wave Advanced Technology Team, a group of more than 20 scientists and engineers developing THz technology for NASA’s near and long-term space missions. This included delivering key components for four major satellite missions and leading more than 75 smaller research and development programs for NASA and the U.S. Department of Defense. At Caltech, he was involved in new biological and medical applications of THz, especially low-power effects on neurons and most recently millimeter-wave monitoring of blood chemistry. He was an IEEE Distinguished Lecturer and the Vice-Chair and Chair of the IEEE MTTs THz Technology Committee. He is currently an elected member of the MTTs AdCom. He has more than 300 articles on THz components and technology and has given more than 250 invited talks on this subject throughout his career of 45 years in THz. His current appointments include the CEO of THz Global, a small research and development company specializing in RF bio-applications, a Senior Scientist Emeritus of biology and electrical engineering with Caltech, and a Senior Research Scientist Emeritus and a Principal Engineer with the NASA Jet Propulsion Laboratory.

Dr. Siegel has been recognized with 75 NASA technology awards, ten NASA team awards, NASA Space Act Award, three individual JPL awards for technical excellence, four JPL team awards, and IEEE MTTs Applications Award in 2018. He is honored to continue the responsibilities in 2022 as the Founding Editor-in-Chief IEEE JOURNAL OF MICROWAVES, which he hopes will invigorate the microwave field. Among many other functions, he was the Founding Editor-in-Chief of IEEE TRANSACTIONS ON TERAHERTZ SCIENCE AND TECHNOLOGY, from 2010 to 2015, and the Founder, in 2009, Chair through 2011, and elected General Secretary since 2012, of the International Society of Infrared, Millimeter, and Terahertz Waves (IRMMW-THz), the world’s largest non-profit society devoted to THz science and technology.

TOPIC EDITORS (ALPHABETICALLY)

TC-3 & TC-24 TOPIC EDITOR: MICROWAVE MEASUREMENTS & MICROWAVE/MM-WAVE RADAR, SENSING, AND ARRAY SYSTEMS



SHERIF S. AHMED (Senior Member, IEEE) received the M.Sc. degree in microwave engineering from The Technical University of Munich, Munich, Germany, in 2007, and the Ph.D. (Dr. Ing.) degree from The University of Erlangen Nuremberg, Erlangen, Germany, in 2013. He is currently an Adjunct Professor with Stanford University, Stanford, CA, USA, and assembles more than 15 years of professional industry experience in various R&D roles. He has coauthored more than 25 research papers, more than 20 patents, and a book on advanced microwave imaging methods.

Dr. Ahmed was the recipient of the University Academic Award of the Technical University of Munich in 2007, Innovation Award of Rohde & Schwarz (R&S) in 2009 and 2018, and IEEE MTT Microwave Prize Award of 2013. Moreover, he is the Co-Chair on the U.S. ANSI standard committee for Measuring the Imaging Performance of mmWave Systems for Security Screening of Humans. His R&D focus extends to microwave

and mmWave imaging, stand-off THz sensing, multistatic radars, advanced signal-processing techniques, terahertz technology, and last but not least, automotive radar design and characterization. Over the past decade, he pioneered the body scanner technology with the first fully electronic multistatic millimeter wave imaging systems, which are being deployed worldwide today at airport checkpoints. In the recent years, he has been advancing the qualifications of automotive radars, towards autonomous driving capabilities.

TC-11 TOPIC EDITOR: MICROWAVE LOW-NOISE TECHNIQUES



JOSEPH BARDIN (Senior Member, IEEE) received the Ph.D. degree in electrical engineering from the California Institute of Technology in 2009. In 2010, he joined the Department of Electrical and Computer Engineering, University of Massachusetts, Amherst, MA, USA, where he is currently a Full Professor. His research group currently focuses on low temperature integrated circuits with applications in radio astronomy and the quantum information sciences. In 2017, he joined the Google Quantum AI team as a Visiting

Faculty Researcher and, in addition to his university appointment, he is currently a Staff Research Scientist with this team.

Dr. Bardin was the recipient of the 2011 DARPA Young Faculty Award, the 2014 NSF CAREER Award, the 2015 Office of Naval Research YIP Award, the 2016 UMass Amherst College of Engineering Barbara H. and Joseph I. Goldstein Outstanding Junior Faculty Award, the 2016 UMass Amherst Award for Outstanding Accomplishments in Research and Creative Activity, and the 2020 IEEE MTT-S Outstanding Young Engineer Award.

TC-20 TOPIC EDITOR: HF-VHF-UHF TECHNOLOGIES AND APPLICATIONS



ROBERT H. CAVERLY (Life Fellow, IEEE) received the Ph.D. degree in electrical engineering from The Johns Hopkins University, Baltimore, MD, USA, in 1983. Since 1997, he has been the Faculty Member with the Department of Electrical and Computer Engineering, Villanova University Villanova, PA, USA, where he is currently a Full Professor. Previously, he was a Professor for more than 14 years with the University of Massachusetts Dartmouth, Dartmouth, MA, USA. He has authored or coauthored more than 100 journal and

conference papers and is the author of two books, *Microwave and RF Semiconductor Control Device Modeling* and *CMOS RFIC Design Principles* from Artech House. His research interests include the characterization of semiconductor devices, such as PIN diodes and FETs in the microwave and RF control environment.

Dr. Caverly is currently the Editor-in-Chief of *IEEE Microwave Magazine* and a member of the MTT-S AdCom and was the General Chair of the 2020 IEEE Radio and Wireless Week.

TC-28 TOPIC EDITOR: BIOLOGICAL EFFECTS AND MEDICAL APPLICATIONS



J.-C. CHIAO (Fellow, IEEE) received the B.S. degree from the Department of Electrical Engineering, National Taiwan University, Taipei, Taiwan, in 1988, and the M.S. and Ph.D. degrees in electrical engineering from the California Institute of Technology, Pasadena, CA, USA, in 1991 and 1995, respectively. He was a Research Scientist with the Optical Networking Systems and Testbeds Group, Bell Communications Research; an Assistant Professor of electrical engineering with the University of Hawaii, Manoa, Honolulu, HI, USA; and a

Product Line Manager and Senior Technology Advisor with Chorum Technologies. From 2002 to 2018, he was the Janet and Mike Greene endowed Professor and Jenkins Garrett Professor of electrical engineering with the University of Texas – Arlington, Arlington, TX, USA. He is currently the Mary and Richard Templeton Centennial Chair Professor in electrical and computer engineering with Southern Methodist University, Dallas, TX, USA. He has authored or coauthored and edited numerous peer-reviewed technical journal and conference papers, book chapters, proceedings and books. He holds 16 patents in RF MEMS, MEMS optical, liquid crystal, nano-scale fabrication, and wireless medical sensor technologies. His research works have been covered by media extensively including *Forbes*, *National Geographic* magazine, National Public Radio, and CBS Henry Ford Innovation Nation.

Dr. Chiao was the recipient of the Lockheed Martin Aeronautics Company Excellence in Engineering Teaching Award, Tech Titans Technology Innovator Award, Research in Medicine award in the Heroes of Healthcare, IEEE Region five Outstanding Engineering Educator Award, IEEE Region five Excellent Performance Award, 2012–2014 IEEE MTT Distinguished Microwave Lecturer Award, 2017–2019 IEEE Sensors Council Distinguished Lecturer Award, and 2011 Edith and Peter O'Donnell Award in Engineering by The Academy of Medicine, Engineering and Science of Texas. He has been the Chair of several international conferences including 2018 IEEE International Microwave Biomedical Conference (IMBiC). He was the Chair of the IEEE MTT-S Technical Committee 10 Biological Effect and Medical Applications of RF and Microwave, Technical Program Chair of the 2019 IEEE International Wireless Symposium, and an Associate Editor for IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES. He is the founding Editor-in-Chief of IEEE JOURNAL OF ELECTROMAGNETICS, RF, AND MICROWAVES IN MEDICINE AND BIOLOGY.

TC-23 & TC-25 TOPIC EDITOR: WIRELESS COMMUNICATIONS & WIRELESS POWER TRANSFER AND ENERGY CONVERSION



ZHIZHANG (DAVID) CHEN (Fellow, IEEE) received the B.Eng. degree in radio engineering from Fuzhou University, Fuzhou, China, the master's degree in radio engineering from Southeast University, Nanjing, China, the Ph.D. degree in electrical engineering from the University of Ottawa, Ottawa, ON, Canada. In 1993, he was an NSERC Postdoctoral Fellow with McGill University, Montreal, QC, Canada. He is currently with the College of Physics and Information Engineering, Fuzhou University, on leave from the Department of Elec-

trical and Computer Engineering, Dalhousie University, Halifax, NS, Canada, where he is a Professor and the former Head of the Department of Electrical and Computer Engineering. He has been an Adjunct or a Visiting Professor with the University of Nottingham, Nottingham, U.K.; École Nationale Supérieure des Télécommunications de Bretagne, Plouzané, France; Shanghai Jiao Tong University, Shanghai, China; Fuzhou University; Hong Kong University of Science and Technology, Hong Kong; and University of Electronic Science and Technology of China, Chengdu, China. He has authored or coauthored more than 450 journal and conference papers in computational electromagnetics, RF/microwave electronics, antennas, and wireless technologies. He was one of the originators of the unconditionally stable methods that have been highly cited and used. His current research interests include time-domain electromagnetic modeling techniques, antennas, wideband wireless communication and sensing systems, and wireless power technology. His team also developed several nonlinear ultra-wideband receivers and planar wireless power transfer transmitting and receiving structures.

Dr. Chen was a Guest Editor of IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES, *IEEE Microwave Magazine*, IEEE JOURNAL OF ELECTROMAGNETICS, RF AND MICROWAVES IN MEDICINE AND BIOLOGY, and *International Journal of Numerical Modeling* (Wiley) and an Associate Editor for IEEE JOURNAL OF MULTISCALE AND MULTIPHYSICS COMPUTATIONAL TECHNIQUES. He was also the founding Chair of the joint Signal Processing and Microwave Theory & Techniques Chapter of IEEE Atlantic Canada, Chair of the IEEE Canada Atlantic Section, and a member of the Board of Directors for IEEE Canada during 2000–2001. He is currently a Track Editor of IEEE TRANSACTIONS ON MICROWAVE AND TECHNIQUES, a Topic Editor of IEEE JOURNAL OF MICROWAVES, and an elected member of the Ad-Com of IEEE Antennas and Propagation Society. He was the recipient of the 2005 Nova Scotia Engineering Award, 2006 Dalhousie graduate teaching award,

2007 & 2015 Dalhousie Faculty of Engineering Research Award, 2013 IEEE Canada Fessenden Medal, and Dalhousie University Professorship. He is a Fellow of the Canadian Academy of Engineering, and Engineering Institute of Canada.

TC-24 & TC21 TOPIC EDITOR: MICROWAVE/MM-WAVE RADAR, SENSING, AND ARRAY SYSTEMS & TERAHERTZ TECHNOLOGY AND APPLICATIONS



KEN B. COOPER (Senior Member, IEEE) received the A.B. degree in physics from Harvard College, Cambridge, MA, USA, in 1997, and the Ph.D. degree in physics from the California Institute of Technology, Pasadena, CA, USA, in 2003. Following postdoctoral research in superconducting microwave qubits, he has been an RF Microwave Engineer with Jet Propulsion Laboratory (JPL), since 2006, where he has been recognized with the Lew Allen Award for Excellence, Ed Stone Award for an Outstanding Research Publication, and a Principal designation for the development of active THz sensors, systems, and techniques. His work with JPL has included the development of scanning 340 GHz and 670 GHz imaging radars for concealed object detection, a compact 95 GHz Doppler radar and 270/560 GHz spectrometer for cometary jet observation, and differential absorption radars at 170 GHz and 560 GHz for humidity sounding on Earth and Mars.

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TC-12 TOPIC EDITOR: MICROWAVE HIGH-POWER TECHNIQUES



STEVE C. CRIPPS (Life Fellow, IEEE) received the master's and Ph.D. degrees from Cambridge University, Cambridge, U.K., in the 1970s. After working for several years with the Pioneering Gallium Arsenide (GaAs) Group, Plessey Research, he emigrated to the United States, where he worked for 15 years in various engineering and management positions with Watkins Johnson, Loral, and Celeritek. In 1996, he returned to the United Kingdom, as an Independent Consultant before taking on an academic post with Cardiff University,

Cardiff, U.K., where he is currently a Distinguished Research Professor. He has authored several bestselling books on RPPA design and is a regular contributor to *IEEE Microwave Magazine* with his popular "Microwave Bytes" column. Dr. Cripps was the recipient of the 2008 IEEE Microwave Application Award.

TC-22 & TC-10 TOPIC EDITOR: MICROWAVE PHOTONICS & SIGNAL GENERATION AND FREQUENCY CONVERSION



AFSHIN S. DARYOUSH (Fellow, IEEE) is currently a Professor of electrical and computer engineering with Drexel University, Philadelphia, PA, USA, where he has developed courses in devices, circuits, and subsystems employed in microwaves, photonics, and antennas. He also conducts research in microwave photonics applied to telecommunications and biomedical engineering that resulted in more than 300 technical articles, ten patents, and eight book chapters. In 2011, he became a member of the Franklin Institute's Committee on Science

and the Arts.

Dr. Daryoush was the recipient of the Drexel University's Graduate Teaching Award in 2000, the IEEE Philadelphia Section's Franklin Key Award in 2015, and the Drexel University's Alumni Award in 2018. After receiving the Microwave Prize in 1986, his 13 articles have been recognized as the best student papers in various IEEE conferences. He has also organized various IEEE conferences since 1993, particularly serving as the TPC Chair of Radio Wireless Symposium 2008 (RWS 2008) and the Chair of the Radio and Wireless Week 2009 (RWW 2009), Microwave Photonics 2010 (MWP 2010), Benjamin Franklin Symposium on Microwave and Antenna Sub-Systems 2014 (BenMAS 2014), and International Microwave Symposium 2018 (IMS 2018).

TC-29 TOPIC EDITOR: MICROWAVE AEROSPACE SYSTEMS

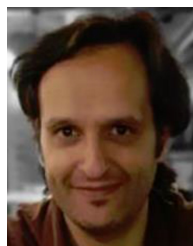


NELSON J. G. FONSECA (Senior Member, IEEE) received the M.Eng. degree in electrical engineering from Ecole Nationale Supérieure d'Electrotechnique, Electronique, Informatique, Hydraulique et Télécommunications, Toulouse, France, in 2003, the M.Sc. degree in electrical engineering from the Ecole Polytechnique de Montreal, Montreal, QC, Canada, in 2003, and the Ph.D. degree in electrical engineering from Institut National Polytechnique de Toulouse – Université de Toulouse, Toulouse, France, in 2010.

He is currently an Antenna Engineer for the Antenna and Sub-Millimetre Wave Section, European Space Agency, Noordwijk, The Netherlands. Since November 2020, he has held an Honorary Appointment as Professional Fellow with the University of Technology Sydney, Sydney, NSW, Australia. He has authored or coauthored more than 250 papers in peer-reviewed journals and conferences and has more than 50 patents issued or pending. His research interests include multiple beam antennas for space missions, beam-former theory and design, ground terminal antennas, transfer of technology from and to terrestrial systems, including 5G networks, and novel manufacturing techniques.

Dr. Fonseca was the Chair of the 38th ESA Antenna Workshop in 2017, and Co-Chair of the 2018 IET Loughborough Antennas & Propagation Conference (LAPC 2018). He is currently an Associate Editor for *IET Microwaves, Antennas and Propagation* and IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES, and a Topic Editor of IEEE JOURNAL OF MICROWAVES. He is also the Chair of the newly founded IEEE MTT-S Technical Committee 29 (TC-29) on Microwave Aerospace Systems. He has been a Board Member of the European School of Antennas and Propagation since January 2019, and is also the coordinator of the ESA/ESoA course on Antennas for Space Applications, for which he was voted best lecturer by the participants of the 2020 edition. He is an elected EurAAP Regional Delegate representing Benelux for the term 2021–2023. He was the recipient of several prizes and awards, including the Best Young Engineer Paper Award at the 29th ESA Workshop on Antennas in 2007, the ESA Teamwork Excellence Award in 2020, and multiple ESA Technical Improvement Awards.

TC-5 TOPIC EDITOR: FILTERS



ROBERTO GÓMEZ-GARCÍA (Senior Member, IEEE) received the Dipl.-Eng. degree in telecommunication engineering and the Ph.D. degree in electrical and electronic engineering from the Polytechnic University of Madrid, Madrid, Spain, in 2001 and 2006, respectively. Since 2006, he has been an Associate Professor with the Department of Signal Theory and Communications, University of Alcalá, Alcalá de Henares, Spain. He has been for several research stays with the C2S2 Department, XLIM Research Institute, University

of Limoges, Limoges, France; Telecommunications Institute, University of Aveiro, Aveiro, Portugal, U.S. Naval Research Laboratory, Microwave Technology Branch, Washington, DC, USA; and Purdue University, West Lafayette, IN, USA. He is also an Adjunct Part-Time Professor with the University of Electronic Science and Technology of China, Chengdu, China, and was an Invited Professor with the Gdansk University of Technology, Gdansk, Poland, during 2019–2020. He has authored or coauthored more than 100 papers in international journals and more than 140 papers in international conferences in his research areas, which include the design of fixed/tunable high-frequency filters and multiplexers in planar, hybrid, and monolithic microwave-integrated circuit technologies, multifunction circuits and systems, software-defined radio and radar architectures for telecommunications, remote sensing, and biomedical applications.

Dr. Gómez-García was a member of the Technical Review Board for several IEEE and EuMA conferences. He is a member of the IEEE MTT-S Filters (MTT-5), IEEE MTT-S RF MEMS and Microwave Acoustics (MTT-6), IEEE MTT-S Wireless Communications (MTT-23), IEEE MTT-S Biological Effects and Medical Applications of RF and Microwave (MTT-28), and IEEE CAS-S Analog Signal Processing Technical Committees. He was the recipient of the 2016 IEEE Microwave Theory and Techniques Society (MTT-S) Outstanding Young Engineer Award. He was an IEEE CAS-S Distinguished Lecturer during 2020–2021. He was an Associate Editor for

IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES from 2012 to 2016 and IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS—PART I: REGULAR PAPERS from 2012 to 2015. He was a Senior Editor of IEEE JOURNAL ON EMERGING AND SELECTED TOPICS IN CIRCUITS AND SYSTEMS from 2016 to 2017. He was Guest Editor of several special/focus issues and sections in IEEE and IET journals. In addition to his role on IEEE JOURNAL OF MICROWAVES, he is the new Editor-in-Chief of IEEE MICROWAVE AND WIRELESS COMPONENTS LETTERS, an Associate Editor of IEEE JOURNAL OF ELECTROMAGNETICS, RF AND MICROWAVES IN MEDICINE AND BIOLOGY, IEEE ACCESS, *IET Microwaves, Antennas, and Propagation*, and *International Journal of Microwave and Wireless Technologies*, and the MTT-S Newsletter Working Group Chair.

TC-6 TOPIC EDITOR: RF MEMS AND MICROWAVE ACOUSTICS



SONGBIN GONG (Senior Member, IEEE) received the B.S. degree in electrical engineering from the Huazhong University of Science and Technology, Wuhan, China, in 2004, and the Ph.D. degree in electrical engineering from the University of Virginia, Charlottesville, VA, USA, in 2010. He is currently an Associate Professor and Intel Alumni Fellow with the Department of Electrical and Computer Engineering and Holonyak Micro and Nanotechnology Laboratory, University of Illinois at Urbana-Champaign, Urbana, IL, USA.

His primary research interests include the design and implementation of MEMS and acoustic devices, components, and subsystems for RF front ends. In addition, his research interests include hybrid microsystems based on the integration of MEMS devices with circuits or photonics for signal processing. He was the recipient of the 2014 Defense Advanced Research Projects Agency Young Faculty Award, the 2017 NASA Early Career Faculty Award, the 2019 Dean's Award for Excellence in Research at UIUC, and the 2019 IEEE Ultrasonics Early Career Investigator Award. Along with his students and postdocs, he was the recipient of the Best Paper Awards from the 2017 and 2019 IEEE International Frequency Control Symposium and the 2018 and 2019 IEEE International Ultrasonic Symposium and the 2nd place in the Best Paper Competition at the 2018 International Microwave Symposium. He was an Associate Editor for IEEE TRANSACTIONS ON ULTRASONICS, FERROELECTRICS, AND FREQUENCY CONTROL and *Journal of Microelectromechanical Systems*, and also the Technical Committee Chair of MTT-6 RF-MEMS and Microwave Acoustics of the IEEE Microwave Theory and Techniques Society.

TC-7 TOPIC EDITOR: MICROWAVE SUPERCONDUCTIVITY AND QUANTUM TECHNOLOGIES



MICHAEL C. HAMILTON (Senior Member, IEEE) received the B.S.E.E. degree from Auburn University, Auburn, AL, USA, in 2000, and the M.S.E.E. and Ph.D. degrees in electrical engineering from The University of Michigan, Ann Arbor, MI, USA, in 2003 and 2005, respectively. From 2006 to 2010, he was a member of Technical Staff with MIT-Lincoln Laboratory, where he worked on instrument-level and system-level projects for next-generation geostationary imaging for weather satellite systems, testing and modeling of highly-

scaled and environmentally-optimized CMOS devices subjected to extreme environmental (cryogenic) conditions, and modeling, design, fabrication and test of advanced technologies for high-frequency RF sample-and-hold and analog-digital conversion circuits based on fully-depleted silicon-on-insulator transistors and CCD structures. His research interests include superconducting electronics technologies, micro/nano fabrication, packaging and integration of high-speed systems, signal and power integrity of densely integrated systems, application of micro and nanostructures for enhanced performance of RF and microwave systems and packaging for extreme environments, including cryogenic and quantum systems. He joined the Department of Electrical and Computer Engineering, Auburn University, Auburn, AL, USA, as an Assistant Professor in 2010 and was promoted to a Professor in 2019. In addition to his research group with Auburn University, he is currently the Director of the Alabama Micro/Nano Science and Technology Center. In 2022, he joined the Google Quantum AI Team as a Visiting Faculty Researcher. He is also the Auburn University IEEE Student Chapter Faculty Advisor and is the Chair of MTT-7 Technical Committee on Microwave Superconductivity and Quantum

Technologies.

TC-21 TOPIC EDITOR: TERAHERTZ TECHNOLOGY AND APPLICATIONS



DMITRY KHOKHLOV received the M.S., Ph.D., and Doctor of Science (Russian analog of the Habilitation degree in Germany) degrees from M.V. Lomonosov Moscow State University, Moscow, Russia, in 1980, 1982, and 1992, respectively. Since 1982, he has been with the Department of Physics, M.V. Lomonosov Moscow State University, in positions from Junior Research Fellow up to Full Professor, since 1997, and the Head of the Chair of General Physics, and Condensed Matter Physics, since 2006. In 2008, he was elected as

Correspondent Member of the Russian Academy of Sciences. Since 2013, he has been the Head of the Expert Council on Condensed Matter Physics of the Russian Foundation for the Basic Research. Since 2015, he has also been the Head of the Expert Council on International Research Projects of the same Foundation. He has been active in teaching and he has developed several lecture courses for undergraduate and graduate students and supervised more than 30 M.Sc. students and about 15 Ph.D. dissertations. He authored or coauthored more than 350 research/conference papers, edited one research monograph, and filed two patents. His research interests include physics of narrow-gap semiconductors, development of sensitive detectors of terahertz radiation, photoelectric phenomena under terahertz excitation, organic semiconductors, and several other areas. He is also the Principal Investigator of more than 15 research grants from different Russian national agencies.

SPECIAL SERIES TOPIC EDITOR



ALLISON MARSH (Senior Member, IEEE) received the B.S. degree in engineering from Swarthmore College and the Ph.D. degree in the history of science, medicine, and technology from Johns Hopkins University, Baltimore, MD, USA. She is currently an Associate Professor of history and the Co-Director of the Ann Johnson Institute for Science, Technology & Society, University of South Carolina, Columbia, SC, USA. Her research focuses on how the general public comes to understand complex engineering ideas through informal

education, specifically in museum settings. She sees history as a Trojan Horse to get people interested in learning more about how engineering affects society. Before coming to the University of South Carolina, she was Curator and the Winton M. Blount Research Chair with Smithsonian National Postal Museum.

Dr. Marsh is the Contributing Editor to *IEEE Spectrum* and writes the monthly "Past Forward" column. In 2014, she won the IEEE-USA, Award for Distinguished Literary Contributions furthering Public Understanding and Advancement of the Engineering Profession for work publicizing the Smithsonian's orphaned engineering collections. She is a vocal advocate for women in STEM and is pioneering the Women in Microwaves oral history project in conjunction with the IEEE History Center.

TC-1 TOPIC EDITOR: FIELD THEORY AND COMPUTATIONAL EM



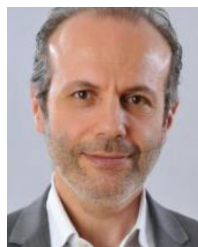
FRANCISCO MESA (Fellow, IEEE) received the B.Sc. and Ph.D. degrees in physics from the University of Seville, Seville, Spain, in 1998 and 1991, respectively. From 1992 to 1997, he was an Assistant Professor with the Department of Applied Physics, University of Seville, where he was promoted to an Associate Professor in 1997 and a Full Professor in 2010. Between 1992 and 2004, he enjoyed four stays in U.S. universities, the first one with the Polytechnic Institute of Brooklyn, New York City, NY, USA, and three more with the

University of Houston, Houston, TX, USA. From July to December 2019, he was a Visiting Researcher with the KTH (Royal Institute of Technology), Stockholm, Sweden. Since 1988, he has been a member of the Microwave Group, University of Seville. During the first years of his research, he worked on computational electromagnetism and on the diverse theoretical aspects of wave propagation involving these structures. Later, he worked on the modeling of metamaterials and periodic planar structures, contributing to the

development of analytic (or quasi-analytic) equivalent circuits to characterize such structures and to find physically insightful explanations of some exotic phenomena. More recently, he has worked on higher symmetries applied to electromagnetic propagation and on the design of geodesic lenses.

Prof. Mesa has been an IEEE Fellow proposed by the IEEE MTT Society since January 2014. He was an Associate Editor for IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES from 2013 to 2016, and a member of the IEEE MTT-S Technical Committee MTT-1 (Field Theory and Computational EM).

TC-26 TOPIC EDITOR: RFID, WIRELESS SENSORS, AND IOT



PAOLO MEZZANOTTE (Member, IEEE) was born in Perugia, Italy, in 1965. He received the Ph.D. degree from the University of Perugia, Perugia, Italy, in 1997. Since 2007, he has been an Associate Professor with the University of Perugia, where he has been involved in teaching the classes on radiofrequencies engineering and systems and circuits for IoT. Since 2014, he has been the Vice Head of the Department of Engineering, University of Perugia. His present h-index is 24. His research activities are testified by more than 170 publica-

tions in the most important specialized journals and at the main conferences of the microwave scientific community. His current research interests include the development of microwave circuits on bio-compatible substrates and enabling technologies for IoT. He is an Associate Editor for *ACES Journal*. From January 2017 to December 2019, he was the Chair of the IEEE Technical Committee MTT-24- RFID Technologies.

TC-13 TOPIC EDITOR: MICROWAVE CONTROL TECHNIQUES



CHRISTOPHER D. NORDQUIST (Senior Member, IEEE) received the B.S., M.S., and Ph.D. degrees in electrical engineering from Pennsylvania State University, University Park, PA, USA, in 1997, 1998, and 2002, respectively.

At Pennsylvania State University, he was an Undergraduate and Graduate Research Assistant from 1995 to 1998 and the National Defense Science and Engineering Graduate Fellow from 1998 to 2001, where he explored heterogeneous integration of compound semiconductor devices through self-assembly. In 2002, he joined Sandia National Laboratories, Albuquerque, NM, USA, where he is currently a Distinguished Member of Technical Staff with the Department of RF/Optoelectronics. His research interests and activities include the design, fabrication, integration, and application of emerging micromachined, and solid-state RF and microwave devices. In this context of exploring new approaches that target key future needs, he has explored the application of a broad range of advanced technology sets including Si, GaAs, InP, GaN, MEMS, and advanced materials. He has coauthored more than 80 journal and conference publications and holds nine patents in these areas.

Dr. Nordquist is a Senior Member of the IEEE Electron Device and Microwave Theory and Techniques Societies. He is currently the Chair of the IEEE MTT-13 Technical Committee on Microwave Control Materials and is on the Editorial Board of IEEE JOURNAL OF MICROWAVES. He was also the Technical Program Co-Chair for the 2018 IEEE International Microwave Workshop in Advanced Materials, on the IEEE CSICS program committee from 2004 to 2006, a reviewer for several IEEE journals, and was a key contributor to Sandia's 2011 R&D100 Award-winning Microresonator Filters and Frequency References team.

TC-9 TOPIC EDITOR: MICROWAVE AND MILLIMETER-WAVE SOLID-STATE DEVICES



DAVID S. RICKETTS (Senior Member, IEEE) received the B.S. and M.S. degrees in electrical engineering from Worcester Polytechnic Institute, Worcester, MA, USA, and the Ph.D. degree in electrical engineering from Harvard University, Cambridge, MA, USA. He is currently a Full Professor of electrical and computer engineering with North Carolina State University, Raleigh, NC, USA. Prior to moving to academia, he spent more than eight years in industrial R&D in the development of integrated circuits in mixed-signal, RF

and power management applications. His work has appeared in *Nature* and in numerous IEEE conferences and journals and was selected for the 2008 *McGraw-Hill Yearbook of Science and Engineering*. He is the author of two books: *The Designer's Guide to Jitter in Ring Oscillators* and *Electrical Solitons*. His research interests include physics, material science and circuit design, investigating the ultimate capabilities of microelectronic devices, and how these are harnessed by differing circuit topologies to produce the highest performing systems.

Prof. Ricketts is a Track Editor of IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES, a Topic Editor of IEEE JOURNAL OF MICROWAVES, and the Chair of the MTT Technical Committee 9 on Microwave Devices. He was the recipient of the NSF CAREER Award, DARPA Young Faculty Award, and George Tallman Ladd Research Award. In addition as an educator, he was the recipient of the 2009 Wimmer Faculty Teaching Fellow at Carnegie Mellon University, the 2013 Harvard University Bok Center Teaching Award, and the 2021 William F. Lane Outstanding Teaching Award at NCSU. Since 2015, he has taught experiential hands-on workshops on building a QAM Radio and a FMCW RADAR across the globe at all of the main microwave conferences.

TC-8 TOPIC EDITOR: RF NANOTECHNOLOGY



LUCA ROSELLI (Fellow, IEEE) joined the University of Perugia, Perugia, Italy, in 1991. In 2000, he founded the spin-off WiS Srl, Foligno, Italy. He was involved in electronic technologies for the Internet of Things for six years. He is currently a Qualified Full Professor with the University of Perugia, where he teaches applied electronics and coordinates the High Frequency Electronics Laboratory. He has authored more than 280 papers (H-i 28, i10 82, and has more than 3000 citations in Google Scholar) and *Green RFID Systems* (Cambridge Univ. Press, 2014). His current research interests include HF electronic systems with special attention to RFID, new materials, and wireless power transfer.

Dr. Roselli was a member of the Board of Directors of ART Srl, Urbino, Italy, from 2008 to 2012. He is a member of the list of experts of the Italian Ministry of Research; the past Chair of the IEEE Technical Committees MTT-24-RFID; Vice Chair of 25-RF Nanotechnologies, 26-Wireless Power Transfer, ERC Panel PE7, and Advisory Committee of the IEEE-WPTC; and Chairman of the SC-32 of IMS. He is also the Co-Chair of the IEEE Wireless Sensor Network Conference. He organized the VII Computational Electromagnetic Time Domain in 2007 and the first IEEE Wireless Power Transfer Conference in 2013. He is an Associate Editor for *IEEE Microwave Magazine*. He is involved with the boards of several international conferences. He is also a reviewer for many international journals, including PROCEEDINGS OF THE IEEE, IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES, and IEEE MICROWAVE AND WIRELESS COMPONENTS LETTERS.

TC-16 TOPIC EDITOR: MICROWAVE AND MILLIMETER-WAVE PACKAGING, INTERCONNECTS, AND INTEGRATION



KAMAL K. SAMANTA (Senior Member, IEEE) received the graduation degree in science (physics), and Engineering (ECE) the double master's degree in management (R&D), and technology (mmW), and the Ph.D. degree in microwave engineering from the University of Leeds, Leeds, U.K. He has extensive experience of about 25 years and led a multidisciplinary government. He performed scientific and industrial research and technology/product development activities for a wide range of industries, including

satellite/space, defense/security, atomic reactor/green energy, high power, semiconductor, and wireless communications, covering frequency MHz to THz and power from μ W (MMICs) to megawatts (SSPAs). His developed products (space-qualified and military- and consumer-grade) include advanced multilayer/3D components (with antennas/filters), devices, circuits (GaN/GaAs/Si, MMICs/MCM), and systems. He was the Chief/Senior Principal/Lead R&D Engineer, Scientist, and Consultant. He was with Thales Aerospace, U.K. (Radar, EW, and ESM systems), European Aeronautics Defense and Space (EADS) Astrium (Airbus), U.K., (GaN, HPA, Satellite Comm), Indian Space Research Organization, ISRO, (satellite payload circuits, Tx/Rx), IPR, Department of Atomic Energy (2MW, 64 active phased array system), Milmega (GaN SSPAs), and RFMD and Filtronics Comp Semiconductor (MF MMICs: pt-to-pt radios, PAs). He is currently with Sony Europe B V, U.K., as the Chief Technologist, microwave and mmW, and Technical Lead for the next-generation front-end modules (5G/beyond). He has authored or coauthored >75 peer-reviewed publications (first/sole authored) and has delivered more than 45 invited talks, including keynotes/panels at IEEE MTT-S conferences. His research interests include multidisciplinary and multiphysics research and development of novel active/passive devices, multilayer/3D miniaturized components, monolithic integrated circuits (GaAs/SiGe/GaN/InP, PAs), and cost-effective multichip and system-on-package modules, and leading industrial solutions.

Dr. Samanta was the recipient of the Commonwealth Fellowship, Best International Researcher Award, and Engineering Excellence Award from IET, London, (2004/2005). He is a Fellow of IET and Life Fellow of IETE, and a Chair/member of IEEE MTT-S Technical Committees: MTT-16 (packaging/integration), MTT-14 (integrated circuits), MTT-12 (high power), and TC-5 (filters). He is on the TPC of major IEEE MTT-S conferences and was a Guest Editor of special issues published in IEEE microwave journals and magazine. He was/is an Associate Editor for IEEE MICROWAVE AND WIRELESS COMPONENTS LETTERS during 2013–2018, *IEEE Microwave Magazine*, IET MAP, and IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES.

TC-27 TOPIC EDITOR: CONNECTED AND AUTONOMOUS SYSTEMS



HASAN SHARIFI (Senior Member, IEEE) received the bachelor's and master's degrees in electrical engineering and the Ph.D. degree in the areas of microelectronics and nanotechnology from Purdue University, West Lafayette, in 1994, 1997, and 2007, respectively. He is currently a Manager of the Department of RF and EO/IR Subsystems, HRL Laboratories, Malibu, CA, USA. His research interests include design, fabrication, and integration of RF/millimeter wave components and subsystems for next-generation phased-array radar, EW

and communication systems as well as low-cost, high-performance EO/IR imaging sensors. Before joining HRL, he was a Research Staff Member with Birck Nanotechnology Center, Purdue University, West Lafayette, IN, USA, from 2005 to 2009, where he worked on CMOS-based RF integrated circuits and advanced heterogeneous integration and packaging. He has authored or coauthored more than 60 journal and refereed conference papers and holds more than 35 issued patents. He was the recipient of a number of awards, including special and extraordinary merit awards from Purdue University and HRL Labs. He was the Technical Program Committee and Editor of the IEEE Silicon Monolithic Integrated Circuits in RF Systems Conference. He is member of Microwave Theory and Techniques and Advanced Packaging societies.

TC-14 TOPIC EDITOR: MICROWAVE AND MM-WAVE INTEGRATED CIRCUITS



ALBERTO VALDES-GARCIA (Senior Member, IEEE) received the B.S. degree (Hons.) in electronic systems engineering from the Monterrey Institute of Technology, Toluca, Mexico, in 1999, and the Ph.D. degree in electrical engineering from Texas A&M University, College Station, TX, USA, in 2006. In 2000, he joined Motorola Broadband Communications, Nogales, Mexico, as an RF Design Engineer. In 2006, he joined IBM Research, Yorktown Heights, NY, USA, where he is currently a Principal Research Staff Member, Manager of

the RF Circuits and Systems Group. In 2013, he was an Adjunct Assistant Professor with Columbia University, New York, NY, USA. He holds more than 75 issued U.S. patents and has authored or coauthored more than 100 peer-reviewed publications. He is the Co-Editor of the book *60 GHz Technology for Gbps WLAN and WPAN: From Theory to Practice* (Wiley, 2011). His research interests include mm-wave systems for communications and imaging applications.

Dr. Valdes-Garcia is the winner of the 2005 Best Doctoral Thesis Award presented by the IEEE Test Technology Technical Council. He was the recipient of the 2007 National Youth Award for Outstanding Academic Achievements, presented by the President of Mexico, a co-recipient of the 2010 George Smith Award presented by the IEEE Electron Devices Society, 2017 Lewis Winner Award for Outstanding Paper presented by IEEE International Solid-State Circuits Conference, and 2017 IEEE JOURNAL OF SOLID-STATE CIRCUITS Best Paper Award. Within IBM, he has been twice a co-recipient of the Pat Goldberg Memorial Award to the best paper in computer science, electrical engineering, and mathematics published by IBM Research (2009 and 2017). He was inducted into the IBM Academy of Technology in 2015 and was recognized as an IBM Master Inventor in 2016 and 2019. He was with the IEEE 802.15.3c 60 GHz Standardization Committee, from 2006 to 2009. Since 2009, he has been a Technical Advisory Board Member with the Semiconductor Research Corporation, where he was the Chair of the Integrated Circuits and Systems Sciences Coordinating Committee, in 2011 and 2012, respectively. Since 2016, he has been a member of the IEEE MTT-S Microwave and Millimeter-Wave Integrated Circuits Technical Committee, where he was the Chair in 2020–2021. In 2013, he was selected by the National Academy of Engineering for its Frontiers of Engineering Symposium.

TC-4 TOPIC EDITOR: MICROWAVE PASSIVE COMPONENTS AND TRANSMISSION LINE STRUCTURES



KE WU (Fellow, IEEE) is the Endowed Industrial Research Chair in Future Wireless Technologies and Professor of Electrical Engineering with the École Polytechnique de Montréal (University of Montreal), Montreal, QC, Canada, where he is also the Director of the Poly-Grames Research Center. He was the Canada Research Chair in RF and millimeter-wave engineering and the Founding Director of the Center for Radiofrequency Electronics Research of Quebec. He held/holds visiting/honorary professorships with various universities around the world and has graduated more than 73 Ph.D. and 95 M.Sc. students. He has authored or coauthored more than 1400 refereed papers, and a number of books and book chapters and filed more than 50 patents.

Prof. Wu was the General Chair of the 2012 IEEE MTT-S International Microwave Symposium and the 2016 President of the IEEE Microwave Theory and Techniques Society (MTT-S). He was an Inaugural North-American representative in the General Assembly of the European Microwave Association. He was the recipient of many awards and prizes, including the inaugural IEEE MTT-S Outstanding Young Engineer Award, the 2004 Fessenden Medal of IEEE Canada, the 2009 Thomas W. Eadie Medal from the Royal Society of Canada, Queen Elizabeth II Diamond Jubilee Medal, the 2013 Award of Merit of Federation of Chinese Canadian Professionals, the 2014 IEEE MTT-S Microwave Application Award, the 2014 Marie-Victorin Prize (Prix du Quebec), the 2015 Prix d'Excellence en Recherche et Innovation of Polytechnique Montréal, the 2015 IEEE Montreal Section Gold Medal of Achievement, the 2019 IEEE MTT-S Microwave Prize, and the 2021 EIC Julian C. Smith

Medal. He was also an IEEE MTT-S Distinguished Microwave Lecturer and is a Fellow of the Canadian Academy of Engineering and the Royal Society of Canada.

TC-2 TOPIC EDITOR: DESIGN AUTOMATION



QIJUN ZHANG (Fellow, IEEE) received the Ph.D. degree in electrical engineering from McMaster University, Hamilton, ON, Canada, in 1987. He was a Research Engineer with Optimization Systems Associates Inc., Dundas, ON, Canada, during 1988–1990, developing advanced optimization software for microwave modeling and design. In 1990, he joined the Department of Electronics, Carleton University, Ottawa, ON, Canada, where he is currently a Chancellor's Professor. He is an Author of the book *Neural Networks for RF and*

Microwave Design (Boston, MA, USA: Artech House, 2000), a co-editor of *Modeling and Simulation of High-Speed VLSI Interconnects* (Boston, MA, USA: Kluwer, 1994), and a co-editor of *Simulation-Driven Design Optimization and Modeling for Microwave Engineering* (London, U.K.: Imperial College Press, 2013). His research interests include modeling, optimization, and neural networks for high-speed/high-frequency electronic design and has more than 300 publications in the area.

Dr. Zhang is a Fellow of the Canadian Academy of Engineering. He is an Associate Editor for IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES. He was an Associate Editor for the *International Journal of RF and Microwave Computer-Aided Engineering* during 2010–2018 and the General Chair of the IEEE MTT-S International Conference on Numerical Electromagnetic and Multiphysics Modeling and Optimization in 2015. He is the Chair of the Technical Committee on Design Automation (MTT-2) of the IEEE Microwave Theory and Techniques (MTT) Society.

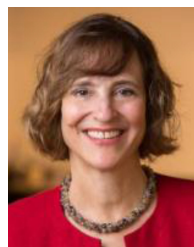
ASSISTANT EDITOR



SHARRI SHAW currently resides in Grand Rapids, MI, USA. She received the B.A. degree in English and a minor in psychology from Saginaw Valley State University, University Center, MI, USA, in 1994, and the master's degree in education with initial certification (M.Ed.) program in 2001 from Aquinas College, Grand Rapids, MI, USA, where she received the Secondary Level Teacher Certification. From 2002 to 2005, she was a teacher in Michigan. From 2006 to 2010, she was an Assistant Editor for IEEE TRANSACTIONS ON

MICROWAVE THEORY AND TECHNIQUES. She currently holds the same position with *IEEE Microwave Magazine*, and is the Publications Administrator for IEEE TRANSACTIONS ON TERAHERTZ SCIENCE AND TECHNOLOGY. She started her additional new role as an Assistant Editor for IEEE JOURNAL OF MICROWAVES in November 2021.

ADMINISTRATIVE EDITOR



KARA MCARTHUR received the B.A. degree in sociology and completed graduate work in health-care ethics from Rice University, Houston, TX, USA. She is currently on two Institutional Review Boards, an oncology IRB and a community IRB in the Dominican Republic. She is an American Medical Writers Association certified medical editor and writer. She has more than 20 years of experience in scholarly publishing, including as the Founding Managing Editor of the *Engineering in Medicine and Biology Society's* first Gold Open

Access journal. Past positions include the Managing Editor of Cambridge University Press's *International Journal of Technology Assessment in Health Care* and the Director of Communications for the Department of Medicine, Baylor College of Medicine, Houston, TX, USA. She has more than 20 peer-reviewed research publications. Her freelance work includes writing, editing, and evaluation research for national and international nonprofits.

PRODUCTION EDITOR



JOANNA GOJLIK received the B.A. degree in journalism/professional writing from The College of New Jersey, Ewing, NJ, USA, the M.A. degree in liberal studies from the University of North Carolina at Greensboro, Greensboro, NC, USA, and the Professional Certificate in editing from New York University, New York, NY, USA. Since 2004, she has been with the IEEE Publications Operations Department, where she is currently a Journals Production Manager. Over the years, she has managed a large portfolio of

journals/transactions/magazines, including the flagship IEEE journal PROCEEDINGS OF THE IEEE since 2007. She has extensive experience in journals copyediting, proofreading, layout, and overall journals production.