


Introduction to the Autumn 2021 Issue

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(Editorial)

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ABSTRACT This is our fourth and final quarterly issue for Volume 1, 2021 of the IEEE JOURNAL OF MICROWAVES (JMW). We wind up our first year with 15 new articles: four invited manuscripts, nine regular contributions, and two of our Special Series pieces: *Microwaves are Everywhere* and *Breakthroughs in Microwaves*. As we plan for our future, we also look back on an exciting and satisfying inaugural year.

INDEX TERMS Autumn issue, editorial board, journal of microwaves, opening editorial.

I. INTRODUCTION

We have reached the last of our quarterly issues for Volume 1 of our fledgling journal. With this first experiment of a fully open access publication entirely within the Microwave Theory and Techniques Society, we have strived to bring to life a broad-based, stand-alone publication, with significant outreach and fresh appeal, while maintaining the high-quality content and traditional format that are hallmarks of all of our subscription-based journals. Although it may seem to some readers that we have just launched our information-laden vessel onto the already overpopulated ocean of technical content, in fact we have been working and planning our christening for more than two and one-half years. It seems like a lifetime! In this Intro to our Autumn Issue, we summarize our technical content, take a brief look back, and then take a tentative look forward. We hope you will continue to follow our progress and support our development as we try to bring *Microwaves* to all.

II. CONTENT

In Volume 1, Issue 4, we continue our goal of reaching out to a more widespread readership through two of our general interest Special Series articles.

Our *Microwaves are Everywhere* tutorial features the “newish” field of nano-microwaves (near-field microwave microscopy). This not-so-new idea in imaging has benefitted enormously from recent instrumentation developments that have crossed over from both biology and optics, and that have now blended with traditional microwave theory and techniques. Although still in its nascence, in the Editor’s opinion the field is poised and ready to be injected into the heart of

biology and molecular chemistry, allowing microwave measurement of material parameters on scales that defy conventional approaches.

Our *Breakthroughs in Microwaves* series from JMW Topic Editor, Rob Caverly, takes on the exciting world of reconfigurable THz circuits being pioneered by Kaushik Sengupta at Princeton University. Building on recent developments in MOSFET and CMOS IC’s and processing techniques, an entirely new way of designing and realizing ultra-high frequency circuitry is coming on line.

Our lead-off invited paper this issue is a review article on microwave backscatter communications from the noted RFID groups of Manos Tentzeris *et al.* at Georgia Tech, USA, and Nuno Carvalho *et al.* at Heriot-Watt University, Scotland, UK, in collaboration with lead author Ricardo Torres and colleagues at the University of Santiago, Aveiro, Portugal. It is an excellent technical follow-up to our *Microwaves are Everywhere* tutorial piece in the Summer Issue [1].

Two invited manuscripts on 5G topics follow our RFID review. The first is from Technical University of Delft’s radar and communications group led by Alexander Yarovoy and colleagues in The Netherlands, on beamforming approaches for radar and communications. The second is from Hiroshi Murata at Mie University, Japan and colleagues at AIST and Seikoh Giken Co., Japan, on electro-optic modulators for 5G applications.

Our last invited paper reviews the unusual field of magneto-electrics and comes to us from noted expert in this field, Nian Xiang Sun at Northeastern University in Boston, Massachusetts, USA. Novel integrated magnetic devices and

applications are covered as well as future directions. This is a great introductory article to an interesting field.

This issue we have nine regular manuscripts, several of which are papers from research groups that have contributed to our journal earlier in the year, and have seen fit to return. Notably, Christian Waldschmidt's group at University of Ulm, Germany, guides us through three very nice articles on automotive radar components, systems, and analysis. These are followed by a paper on a radar ray tracing simulator for large MIMO systems in the automotive applications arena by the well-known radar group of Martin Vossiek and colleagues at Friedrich-Alexander University, Erlangen in Germany.

Our own Nelson Fonseca, of ESTEC, in collaboration with Jiro Hirokawa from Tokyo Institute of Technology, Japan, tackle the design of large-scale beam forming networks as an alternative to Butler matrix approaches, in our fifth regular manuscript contribution.

Next in the queue is a paper from former JMW contributor George Eleftheriades and his student at University of Toronto, Canada, who introduce a novel surface-wave driven continuously tunable phase shifter at X-band with excellent performance characteristics.

In an unusual contribution on magnons (quantized spin states) from Randall Victora and colleagues at University of Minnesota, USA, experimental scattering is directly compared to sophisticated modelling to help advance the understanding and real-world applications of these devices.

Maxim Zhadobov and colleagues from Rennes University, France, contribute a second JMW article on cell dosimetry in the millimeter-wave bands and this time reach down to the subcellular regions to characterize energy absorption in organelles.

Finally, we conclude our Autumn Issue with a really wonderful paper by Anuar de Jesus Fernandez Olvera, Amlan Mukherjee and Sascha Preu at Technical University of Darmstadt, Germany. The paper describes and then demonstrates a full two-port, free-space-coupled vector network analyzer (VNA) based on continuous wave photomixers and optical lasers. The VNA covers the complete frequency range from 100 to 1000 GHz with 2 MHz resolution and up to 80 dB of dynamic range in transmission mode! This could be a real game changer for fast broad-band vector measurements in the THz band.

III. LOOKING BACK ON VOLUME 1

Although we have only been visible for a short nine months, it is useful to take a quick look back at our progress, gauge our accomplishments, and own up to our shortfalls.

As this Editor stated in his opening editorial to the Inaugural Issue of IEEE JOURNAL OF MICROWAVES [2], "Starting up a new journal from scratch is a daunting task..." In the process, we recruited a broad cadre of exceptionally talented and well-connected editors, set some very ambitious technical and outreach goals, and introduced a variety of novel editorial features and a brand new manuscript review process ([3], page

671). Most importantly, we are attempting to bring together the entire microwave community: academic and government labs, industry and small businesses, students and veteran researchers, with a stand-alone publication that has something for everyone and does not detract, or interfere with our sister journals within the MTT Society.

At this point, we cannot claim more than a modicum of progress through the metrics we can track, but we are hopeful that by emphasizing our authors and our readers we will make progress towards our larger goals. Perhaps we can take some comfort in the fact that many of our initial authors are now "repeat customers." This must mean we are doing at least a few things well.

Our proposal to IEEE back in 2020, to print and distribute by post, our 500+-page Inaugural Issue at no cost to any and all who were willing to make a request through our journal home page portal, was indeed a great success. To date we have distributed more than 1500 copies of this issue to recipients in 80 countries – all of whom this EiC has contacted personally. Feedback from many of these individuals has been encouraging, and we hope at least a few will become long-term followers of our new journal.

As an homage to the Inaugural print issue, and with the intent to have readers "skim through" the complete contents of our issues as they appear on IEEEExplore, we have released all of our full issues as online "Flip-Books" that one can quickly page through, as you would a magazine. So far, this style of scanning through each issue (rather than bringing up individual papers via IEEEExplore) has had mixed reviews. We intend to keep it going at least through 2022, and welcome your feedback on this alternative method of viewing our journal content.

If we include the 15 manuscripts in this Autumn Issue, we have published a total of 79 articles to date (83 if you count these editorials), and our download and HTML viewing counts from Xplore Analytics as of August 31 (before this final 2021 issue was released) totaled close to 77,000. In fact, if you rank all IEEE publications by their article usage (downloads and html views) for manuscripts published in the period January-June 2021 (the only period in 2021 for which the data has been tallied to date), we come in at 14th out of 377. Even more impressive, if you count usage/article published in this same period for original research articles only, **we rank 3rd out of 255** – right behind BIG DATA MINING AND ANALYTICS with only 19 papers and 27,990 views, and IEEE PROCEEDINGS with 42 papers and 59,340 views. Our 53 published papers between January and June 2021 attracted 62,842 views, for an average of 1,185 views per article, more than double the next journal in the ranking! We hope to continue this trend as we move forward, but we also do not want to get too focused on popularity as a means of judging quality, or value to our community. It is a bit early to start counting citations, and although this number is beginning to grow, it is still quite low – below 50, as of August. Again, we would like to do a bit better here, but without compromising readership.

On the reviewing side, we have had 210 individual reviewers for our 79 articles, many of whom have helped us out more than once over the course of the year. All of them are listed in our special Volume 1 Reviewer's Page that will be published on IEEEExplore with this issue. We cannot thank them enough.

In our Summer Issue (July 2021) [3] we introduced our new Journal Club Review Process, which we hope will expand and improve our reviews in the future, but which to date we have only invoked a couple of times. We expect to make much better use of this new mechanism in 2022, and to get detailed feedback on the merits/failings of this novel process.

It is hard for this Editor to judge how well we are doing on outreach, especially given the severe restrictions on travel and collegial intermingling caused by Covid 19 restrictions. Normally, a large amount of direct feedback, as well as anecdotal information on the successes and failures of our new journal would be exchanged at conferences, meetings, and workshops, where large numbers of our community is used to gathering. In the interim, we have been doing some social media posting through LinkedIn, as well as some advertising on ResearchGate, on the webpages of Microwaves 101, and through ads in IEEE MICROWAVE MAGAZINE. We are also reaching out to industry researchers through *Microwave Journal*. At least a portion of our Inaugural Issue print requests have come through reader awareness via ResearchGate and Microwaves 101, but it is a small percentage. Clearly we must do more to get the word out about our existence, our philosophy, and our quality. You can help by letting your colleagues know about us, and by letting us know your experiences as authors or readers. We welcome all feedback and suggestions, and will respond personally to each and every comment we receive.

IV. LOOKING FORWARD TO VOLUME 2

Looking ahead to 2022, and Volume 2 of IEEE JOURNAL OF MICROWAVES, we want to continue to bring you a range of Special Series features, invited comprehensive review and tutorial articles, a wide range of regular contributed papers, and exposure to areas and applications of microwaves that you might not otherwise see in one of our more traditional publications. We would also like to expand our reach into the science communities by inviting noted physicists, chemists, biologists, mathematicians, and medical experts to highlight their own experience and vision on the role of microwaves in their research. We plan to solicit and highlight more industry researchers as well, to broaden the landscape on how and where microwaves play a role in new technologies and applications.

For the next year, we are going to continue with a quarterly issue release sequence: Winter-Spring-Summer-Autumn (January-April-July-October), but if our paper queue begins to expand significantly, we will re-evaluate our schedule for 2023.

We all realize that it is extremely difficult for a young author to take a chance and submit his/her work to a journal that has

yet to receive an impact factor, and that it is just as hard for a senior author to submit their best work to a journal that is just starting out. There is little this editor can do to assuage any fears of missed opportunity or lack of visibility incurred by our current nascent status. However, for those willing to take a chance, we offer a superior author experience, a high quality standard, an experienced and dedicated Editorial Board with very personalized service, and a chance to be a part of something that is both unique and growing.

Speaking for the entire Editorial Board, and our Administrative and Production Editors, we again thank our authors, our reviewers, and all of you readers, for your persistent and growing support for our new journal. We all hope you continue to enjoy and to benefit from our continuing efforts in 2022 to *Expand Science, Technology and Connectivity across the Globe*.

V. OUR EDITORIAL TEAM

In an effort to truly span all the disciplines that make up our microwave community, our Topic Editors have been assembled from the Chairs, Vice-Chairs, and key participants of all twenty-six active technical committees¹ within the Microwave Theory and Techniques 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 two former and three current IEEE journal Editors-in-Chief, a former MTT-S AdCom President, and eleven current and former IEEE journal Associate Editors. Our technical efforts are aided by a senior administrative editor with experience on several IEEE journals, and a veteran production editor. We are sorry to have to say goodbye this month to our founding Assistant Editor, Dr. Maryam Ali, who, after serving with us part-time for the last 18 months, is moving on to a full-time job outside of IEEE. Her duties will be picked up Kara McArthur and Peter Siegel while we wait for a replacement to come on board.

Our Editorial Board brings an unprecedented level of technical and operational expertise, as well as a personal approach to the journal, to our contributing authors, to our valued reviewers, and to all our readers. You will find photos and short bios of our entire team at the end of this editorial introduction to Volume 1, Issue 4 of IEEE JOURNAL OF MICROWAVES.

ACKNOWLEDGMENT

The EiC would like to single out two individuals within the IEEE Publications community who have continued to go above and beyond in support of this journal over the last quarter: Sonal Parikh and Louis Vacca – thank you both again for all your extra efforts! The EiC would also like to thank

¹The current 26 MTT technical committees are listed on the IEEE JOURNAL OF MICROWAVES web page: <https://mtt.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://mtt.org/tcfdc>).

MTT's Anding Zhu for continued support of web content, outreach, and publicity for the journal. Finally, and to repeat, this EiC would not still be here if it weren't for the continuous support of our Administrative – and now also our Assistant – Editor, Kara McArthur, our IEEE Production Editor, Joanna Gojlik, and our superb Topic Editors. We all meet regularly to discuss our philosophy, exchange ideas, bring in new authors and readers, and help make this journal the best it can be.

REFERENCES

- [1] P. H. Siegel, "Microwaves are everywhere: Do you know where your pet is?," *IEEE J. Microwaves*, vol. 1, no. 3, pp. 679–688, Jul. 2021.
- [2] P. H. Siegel, "Introduction to the IEEE Journal of Microwaves," *IEEE J. Microwaves*, vol. 1, no. 1, pp. 5–13, Jan. 2021.
- [3] P. H. Siegel, "Introduction to the summer 2021 issue," *IEEE J. Microwaves*, vol. 1, no. 3, pp. 670–678, Jul. 2021.

EDITORIAL BOARD

EDITOR-IN-CHIEF



PETER H. SIEGEL (Life Fellow, IEEE) received the B.A. degree in astronomy from Colgate University, in 1976, the M.S. degree in physics from Columbia University, in 1978, and the Ph.D. degree in electrical engineering (EE) from Columbia University, in 1983. 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 the National Radio Astronomy Observatory, Central Development Labs, Char-

lottesville, VA, USA, from 1984 to 1986, a Technical Group Supervisor and Senior Research Scientist with the Jet Propulsion Laboratory (JPL), National Aeronautics and Space Administration (NASA), Pasadena, CA, USA, from 1987 to 2014, and a Faculty Associate in electrical engineering and 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 (SWAT) 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 MTT-S THz Technology Committee. He is currently an elected member of the MTT-S 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 was recognized with 75 NASA technology awards, ten NASA team Awards, the NASA Space Act Award, three individual JPL awards for technical excellence, four JPL team Awards, and the IEEE MTT-S Applications Award in 2018. He is honored to take up the responsibility as the Founding Editor-in-Chief of IEEE JOURNAL OF MICROWAVES, which he hopes will invigorate the microwave field. Among many other functions, he was the Founding Editor-in-Chief for IEEE TRANSACTIONS ON TERAHERTZ SCIENCE AND TECHNOLOGY, from 2010 to 2015, and the Founder, in 2009, the Chair through 2011, and has been an elected General Secretary since 2012, of the International Society of Infrared, Millimeter, and Terahertz Waves (IRMMW-THz), the world's largest society devoted exclusively 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, 20 patents, and a book on advanced microwave imaging methods. He was the recipient of the University Academic Award of the Technical University of Munich (TUM) in 2007, the Innovation Award of Rohde & Schwarz (R&S) in 2009 and 2018, and the 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. Dr. Ahmed's 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 was 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, the University of Massachusetts, Amherst, 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. He was the recipient of a 2011 DARPA Young Faculty Award, a 2014 NSF CAREER Award, a 2015 Office of Naval Research YIP Award, a 2016 UMass Amherst College of Engineering Barbara H. and Joseph I. Goldstein Outstanding Junior Faculty Award, a 2016 UMass Amherst Award for Outstanding Accomplishments in Research and Creative Activity, and a 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. He has been a Faculty Member with Villanova University, the Department of Electrical and Computer Engineering since 1997 and is currently a Full Professor. Previously, he was a Professor for more than 14 years with the University of Massachusetts Dartmouth. 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. Dr. Caverly's research interests are focused on the characterization of semiconductor devices such as PIN diodes and FETs in the microwave and RF control environment. Dr. Caverly is the current 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 Electrical Engineering Department, National Taiwan University, Taiwan, in 1988, and the M.S. and Ph.D. degrees in electrical engineering from the California Institute of Technology, in 1991 and 1995. He was a Research Scientist with the Optical Networking Systems and Testbeds Group, Bell Communications Research, Assistant Professor of Electrical Engineering with the University of Hawaii, Manoa, and Product Line Manager and Senior Technology Advisor with Chorum

Technologies. Dr. Chiao was Janet and Mike Greene endowed Professor and Jenkins Garrett Professor of Electrical Engineering with the University of Texas – Arlington from 2002 to 2018. He is currently Mary and Richard Templeton Centennial Chair Professor in electrical and computer engineering, Southern Methodist University (SMU).

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 5 Outstanding Engineering Educator Award, IEEE Region 5 Excellent Performance Award, 2012-2014 IEEE MTT Distinguished Microwave Lecturer Award, 2017-2019 IEEE Sensors Council Distinguished Lecturer Award, and the 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 (IMBioC). He was the Chair for the IEEE MTT-S Technical Committee 10 “Biological Effect and Medical Applications of RF and Microwave,” the Technical Program Chair of 2019 IEEE International Wireless Symposium, and an Associate Editor of 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 CHEN (Fellow, IEEE) received the B.Eng. degree in radio engineering from Fuzhou University, Fujian, China, the M.Sc. degree in radio engineering from Southeast University (formerly Nanjing Institute of Technology), Nanjing, China, and the Ph.D. degree in electrical engineering from the University of Ottawa, Ottawa, Ontario, Canada, respectively. He is a Professor and the former Head of the Department of Electrical and Computer Engineering, Dalhousie University, Halifax, Nova Scotia, Canada.

Dr. Chen was active in teaching, research and professional services. He was teaching various undergraduate and graduate courses in the areas of communication systems, RF/microwave electronics/systems, antennas, and electromagnetics. He has authored or coauthored more than 450 refereed journal/conference papers and 26 industrial reports, published one book, contributed to two books, edited one research monograph and one conference proceeding, and filed eight patent applications in the areas of computational electromagnetics and RF/microwave circuit and system design (some of his publications have been cited extensively in SCI literatures). He was one of the key originators in developing new numerical algorithms and in designing a new class of compact RF circuits and systems for wireless communications. He was a Sole/Principal Investigator of more than 28 grants from both government and industry, including a NSERC Discovery Accelerator Supplement Grant, NSERC Strategic Project Grants on Ultra-wideband Impulse

Radios and Novel RF-front ends, a research contract in developing structure composite microwave materials for radar applications from 2011 to 2013, an Atlantic Innovation Fund on generic smart RF transceivers. He is a Fellow of the Canadian Academy of Engineering (CAE), and a Fellow of Engineering Institute of Canada (EIC). He is a Registered Professional Engineer and was a Consultant for local companies.

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, in 1997 and the Ph.D. degree in physics from the California Institute of Technology, in 2003. Following Postdoctoral Research in superconducting microwave qubits, he has been working with the Jet Propulsion Laboratory since 2006 as an RF Microwave Engineer, where he has been recognized with the Lew Allen Award for Excellence, the Ed Stone Award for an Outstanding Research Publication, and a Principal

designation for the development of active THz sensors, systems, and techniques. Ken's 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.

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, 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, Dr. Cripps returned to the U.K., working as an Independent Consultant before taking on an Academic post with Cardiff University, where he

is currently a Distinguished Research Professor. Dr. Cripps has authored several best-selling books on RFPA design and is a regular contributor to *IEEE Microwave Magazine* with his popular “Microwave Bytes” column. Dr. Cripps was the 2008 recipient of the IEEE Microwave Application Award.

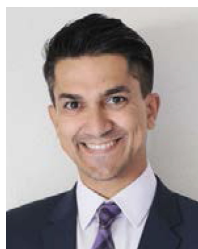
TC-22 & TC-10 TOPIC EDITOR: MICROWAVE PHOTONICS & SIGNAL GENERATION AND FREQUENCY CONVERSION



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. He became a member of the Franklin Institute's Committee on Science and

the Arts in 2011. Dr. Daryoush was the recipient of Drexel University's Graduate Teaching Award in 2000, the IEEE Philadelphia Section's Franklin Key Award in 2015, and 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 been also organized various IEEE conferences since 1993, particularly is the TPC Chair for Radio Wireless Symposium 2008 (RWS 2008) and the Chair for the Radio and Wireless Week 2009 (RW 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

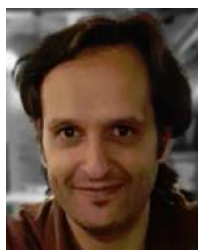


NELSON J. G. FONSECA (Senior Member, IEEE) received the M.Eng. degree from Ecole Nationale Supérieure d'Electrotechnique, Electronique, Informatique, Hydraulique et Télécommunications (ENSEEIHT), Toulouse, France, in 2003, the M.Sc. degree from the Ecole Polytechnique de Montreal, Quebec, Canada, also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

He currently works as an Antenna Engineer with the Antenna and Sub-Millimetre Wave Section, European Space Agency (ESA), Noordwijk, The Netherlands. Since November 2020, he has been held an Honorary Appointment as Professional Fellow with the University of Technology Sydney (UTS), Australia. He has authored or coauthored more than 230 papers in peer-reviewed journals and conferences and has over 50 patents issued or pending. His current 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 the Co-Chair of the 2018 IET Loughborough Antennas & Propagation conference (LAPC 2018). He is currently an Associate Editor of *IET Microwaves, Antennas and Propagation* (MAP) and for IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES (TMTT), and the Topic Editor of IEEE JOURNAL OF MICROWAVES (JMW). He is the Co-Vice Chair of the newly founded IEEE MTT-S Technical Committee 29 (MTT-29) on Microwave Aerospace Systems. He has been a Board Member of the European School of Antennas and Propagation (ESoA) 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 the several Prizes and Awards, including the Best Young Engineer Paper Award at the 29th ESA Workshop on Antennas in 2007, an ESA Teamwork Excellence Award in 2020 and multiple ESA technical improvement awards.

TC-5 TOPIC EDITOR: FILTERS



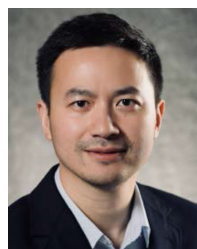
ROBERTO GÓMEZ-GARCÍA (Senior Member, IEEE) received the Dipl.-Eng. degree in telecommunication engineering and the Ph.D. degree in electrical and electronic engineering from the Polytechnic University of Madrid, Madrid, in 2001 and 2006, respectively. Since 2006, he has been an Associate Professor with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

Limoges, France, the Telecommunications Institute, University of Aveiro, Aveiro, Portugal, the 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 an Invited Professor with the Gdansk University of Technology, Poland, during 2019–2020. His current research interests include the design of fixed/tunable high-frequency filters and multiplexers in planar, hybrid, and monolithic microwave-integrated circuit technologies, multifunction circuits and systems, and software-defined radio and radar architectures for telecommunications, remote sensing, and biomedical applications, in which he has authored or coauthored more than 100 papers in international journals and more than 140 papers in international conferences.

Dr. Gómez-García was a member for the Technical Review Board for several IEEE and EuMA conferences. He is also 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 is an IEEE CAS-S Distinguished Lecturer from 2020 to 2021. He was an Associate Editor of 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 a Guest Editor of several special/focus issues and sections in IEEE and IET journals. He is currently an Associate Editor of IEEE MICROWAVE AND WIRELESS COMPONENTS LETTERS, IEEE JOURNAL OF ELECTROMAGNETICS, RF AND MICROWAVES IN MEDICINE AND BIOLOGY, IEEE ACCESS, *IET Microwaves, Antennas, and Propagation*, and the *International Journal of Microwave and Wireless Technologies*, and the MTT-S Newsletter Working Group Chair.

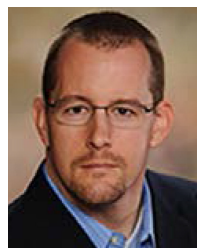
TC-6 TOPIC EDITOR: RF MEMS AND MICROWAVE ACOUSTICS



SONGBIN GONG (Senior Member, IEEE) received the B.S. degree in electrical engineering from Huazhong University of Science and Technology, 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 an 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 research interests primarily include the design and implementation of MEMS and acoustic devices, components, and subsystems for RF front ends. In addition, his research explores 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, 2019 Dean's Award for Excellence in Research at UIUC, and 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 2018 International Microwave Symposium. He has been an Associate Editor of 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 in 2000 and the M.S.E.E. and Ph.D. degrees in electrical engineering from The University of Michigan, 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 conditions, and modeling, design, fabrication and test of advanced technologies for high-frequency RF sample-

hold and analog-digital conversion circuits based on Fully-Depleted Silicon-On-Insulator (FD-SOI) transistors and CCD structures. His current 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 (both high and low temperature). He joined the Electrical and Computer Engineering Department of Auburn University as an Assistant Professor in 2010 and was promoted to Professor in 2019. He is the Director of the Alabama Micro/Nano Science and Technology Center

(AMNSTC), which is a micro/nano technology center with Auburn University funded by the State of Alabama. Dr. Hamilton is the Auburn University IEEE Student Chapter Faculty Advisor. He is on the IEEE MTT-S Education Committee, Vice-Chair of MTT-7 Technical Committee on Microwave Superconductivity and Quantum Technologies Committee, and producer/moderator of the IEEE MTT-S Webinar Series.

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, he has been 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 been the Head of the Expert Council on International Research Projects of the same Foundation.

He was 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. theses. 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 was a 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 history of science, medicine, and technology from Johns Hopkins University. She is currently an Associate Professor of history and the Co-Director of the Ann Johnson Institute for Science, Technology & Society with the University of South Carolina. Her research interest include 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 UofSC, she was Curator and the Winton M. Blount Research Chair with the Smithsonian National Postal Museum.

Dr. Marsh is a 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

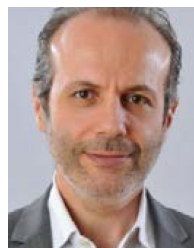


FRANCISCO MESA (Fellow, IEEE) received the B.Sc. and Ph.D. degrees in physics from the University of Seville, Seville, Spain, in 1998 and 1991, respectively. From 1992 to 1997 he was an Assistant Professor with the Department of Applied Physics, University of Seville, where he was promoted to an Associate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

December 2019, he was a Visiting Researcher with KTH (Royal Institute of Technology), Stockholm (Sweden). Since 1988, he has been a member of the Microwave Group of the University of Seville. During the first years of his research he worked on computational electromagnetism as well as on the diverse theoretical aspects of wave propagation involving these structures. Later, he worked with 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 was worked with higher symmetries applied to electromagnetic propagation and on the design of geodesic lenses.

Since January 2014, Prof. Mesa has been an IEEE Fellow proposed by the IEEE MTT Society. He was an Associate Editor of *IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES* from 2013 to 2016, and he is a member of 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, in 1997. Since 2007, he has been an Associate Professor with the University of Perugia, where he was involved in teaching the classes "Radiofrequencies Engineering" and "Systems and Circuits for IoT." Since 2014, he has been the Vice Head of the Department of Engineering with the University of Perugia. He is an Associate Editor of *ACES journal*. His present h-index is 24 his research activities

are testified by more than 170 publications 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 the enabling technologies for IoT. Dr. Mezzanotte, from January 2017 to December 2019, 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 Penn State, 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 in Albuquerque, NM, USA, where he is currently a Distinguished Member of Technical Staff with the RF/Optoelectronics Department. He has coauthored more than 80 journal and conference publications and holds nine patents in these areas. His current 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.

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 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, as 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-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 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.

Prof. Roselli was a member of the Board of Directors of ART Srl, Urbino, Italy, from 2008 to 2012. He is also a member of the list of experts of the Italian Ministry of Research, the past Chair of the IEEE Technical Committees MTT-24-RFID, the Vice Chair of 25-RF Nanotechnologies, 26-Wireless Power Transfer, the ERC Panel PE7, and the Advisory Committee of the IEEE-WPTC, and the 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 also an Associate Editor of IEEE MICROWAVE MAGAZINE. He is involved on 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) graduated in science (physics), and engineering (ECE) before the double master's degree in management (R&D), and technology (mmW), which followed the Ph.D. degree in microwave Engineering from the University of Leeds, U.K. He has extensive experience of about 25 years and led multidisciplinary government, 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. His roles have included that of Chief/Senior Principal/Lead R&D -Engineer, -Scientist and -Consultant. The organizations he has worked for include 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 radiators, PAs). He is currently working for 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). His current interest includes 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 (SoP) modules, and leading industrial solutions. In these areas, he has authored or coauthored >75 peer-reviewed publications (first/sole authored) and has delivered more than 45 invited talks (including keynotes/panels) in IEEE MTTs conferences.

Dr. Samanta was the recipient of the Commonwealth Fellowship, the Best International Researcher Award, and the Engineering Excellence Award from the IET, London, (2004/5). He is a Fellow of IET and Life Fellow of IETE, 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 sits on the TPC of the major IEEE MTT-S conferences and was a Guest Editor for special issues of IEEE microwave journals/magazine. He was/is an Associate Editor for IEEE MWCL (2013-18), *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 degree in 1994 and master's degree in 1997 in electrical engineering and the Ph.D. degree in the areas of microelectronics and nanotechnology from Purdue University, West Lafayette, in 2007. He is currently a Manager of RF and EO/IR Subsystems Department with HRL Laboratories, Malibu, CA, USA. He has authored or coauthored more than 60 journal and refereed conference papers and holds more than 35 issued patents. His research topics 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 from 2005 to 2009 working on CMOS-based RF integrated circuits as well as advanced heterogeneous integration and packaging. Dr. Sharifi was the recipient of a number of Awards, including special and extraordinary merit Awards from Purdue University and HRL Labs. He was a technical program committee and the Editor for the IEEE Silicon Monolithic Integrated Circuits in RF Systems Conference. He is member of Microwave Theory and Techniques and Advanced Packaging societies.

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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, USA. He holds more than 65 issued U.S. patents and has authored or coauthored more than 100 peer-reviewed publications. His current research work focuses on mm-Wave systems for communications and imaging applications. He is a Co-Editor of the book *60 GHz Technology for Gbps WLAN and WPAN: From Theory to Practice* (Wiley, 2011). 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, the 2017 Lewis Winner Award for Outstanding Paper presented by IEEE International Solid-State Circuits Conference, and the 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 in 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 a Chair of the Integrated Circuits and Systems Sciences Coordinating Committee, in 2011 and 2012, respectively. Since 2016, he has been a member for the IEEE MTT-S Microwave and Millimeter-wave Integrated Circuits Technical Committee, where he has been the Chair, since 2020. 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 with Future Wireless Technologies and Professor of Electrical Engineering with École Polytechnique (University of Montreal). He was the Director of the Poly-Grames Research Center. He was also the Canada Research Chair with RF and Millimeter-Wave Engineering and the Founding Director of the Center for Radiofrequency Electronics Research of Quebec. Dr. Wu held/holds visiting/honorary professorships with various universities around the world. He has graduated more than 70 Ph.D. and 94 M.Sc. Students. He has authored or co-authored more than 1300 refereed papers, and a number of books and book chapters and filed more than 50 patents. Dr. Wu was the General Chair of the 2012 IEEE MTT-S International Microwave Symposium. He was the 2016 President of the IEEE Microwave Theory and Techniques Society (MTT-S). He was the Inaugural North-American Representative with 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, 2004 Fessenden Medal of the IEEE Canada, 2009 Thomas W. Eadie Medal from the Royal Society of Canada, Queen Elizabeth II Diamond Jubilee Medal, 2013 Award of Merit of Federation of Chinese Canadian Professionals, 2014 IEEE MTT-S Microwave Application Award, the 2014 Marie-Victorin Prize (Prix du Quebec), 2015 Prix d'Excellence en Recherche et Innovation of Polytechnique Montréal, 2015 IEEE Montreal Section Gold Medal of Achievement, and 2019 IEEE MTT-S Microwave Prize. He was an IEEE MTT-S Distinguished Microwave Lecturer. Dr. Ke Wu is a Fellow the Canadian Academy of Engineering and Royal Society of Canada.

uated more than 70 Ph.D. and 94 M.Sc. Students. He has authored or co-authored more than 1300 refereed papers, and a number of books and book chapters and filed more than 50 patents. Dr. Wu was the General Chair of the 2012 IEEE MTT-S International Microwave Symposium. He was the 2016 President of the IEEE Microwave Theory and Techniques Society (MTT-S). He was the Inaugural North-American Representative with 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, 2004 Fessenden Medal of the IEEE Canada, 2009 Thomas W. Eadie Medal from the Royal Society of Canada, Queen Elizabeth II Diamond Jubilee Medal, 2013 Award of Merit of Federation of Chinese Canadian Professionals, 2014 IEEE MTT-S Microwave Application Award, the 2014 Marie-Victorin Prize (Prix du Quebec), 2015 Prix d'Excellence en Recherche et Innovation of Polytechnique Montréal, 2015 IEEE Montreal Section Gold Medal of Achievement, and 2019 IEEE MTT-S Microwave Prize. He was an IEEE MTT-S Distinguished Microwave Lecturer. Dr. Ke Wu is a Fellow the Canadian Academy of Engineering and 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, Canada, in 1987. He was a Research Engineer with Optimization Systems Associates Inc., Dundas, Ontario, Canada during 1988–1990 developing advanced optimization software for microwave modeling and design. He joined the Department of Electronics, Carleton University, Ottawa, Canada, in 1990, where he is currently a Chancellor's Professor. He is an author of the book *Neural Networks for RF and Microwave Design* (Boston: Artech House, 2000), a Coeditor of *Modeling and Simulation of High-Speed VLSI Interconnects* (Boston: Kluwer, 1994), and a Coeditor 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 of IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES. He was an Associate Editor for *International Journal of RF and Microwave Computer-Aided Engineering* from 2010 to 2018, and the General Chair of 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.

Dr. Zhang is a Fellow of the Canadian Academy of Engineering. He is an Associate Editor of IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES. He was an Associate Editor for *International Journal of RF and Microwave Computer-Aided Engineering* from 2010 to 2018, and the General Chair of 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.

ADMINISTRATIVE EDITOR



KARA MCARTHUR received the B.A. degree in sociology and completed graduate work in health-care ethics—both from Rice University, USA, and is currently serves on two Institutional Review Boards (IRBs), 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 serving as Founding Managing Editor of the Engineering in Medicine and Biology Society's first Gold

Open Access journal. Past positions include a Managing Editor of Cambridge University Press's *International Journal of Technology Assessment in Health Care* and Director of communications for the Department of Medicine, Baylor College of Medicine. 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. She has been with the IEEE Publications Operations Department since 2004, 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.

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.