INTERNATIONAL MICROWAVE SYMPOSIUM

2020

Plenary Session

IMS

Connecting Minds. Exchanging Ideas.

LOS ANGELES 2020

CONNECTIVITY MATTERS

IEEE

MTT-S

IEEE MICROWAVE THEORY & TECHNIQUES SOCIETY

RFIC

ARFTG

AGENDA

	Speaker
Welcome to the IMS2020 Plenary Session	
IMS2020 General Chairs Address	Tim Lee *General Chair*
Welcome from the MTT Society	Alaa Abunjaileh *2020 MTT Society President*
Awards Acknowledgement • IEEE Fellows • Outstanding Young Engineer • Microwave Application • Distinguished Educator • N. Walter Cox • Distinguished Service • Microwave Career	
Keynote Address #1 *"Can Digital Technologies Really Change the World?"*	**Doreen Bogdan-Martin** *Director, Telecommunication Development, International Telecommunication Union*
Welcome from the EuMA Society	Frank van den Bogaart *2020 EuMA President*
IMS2020 Technical Program Co-Chairs	Gabriel Rebeiz and James Buckwalter
Keynote Address #2 *"The Broadband Space Race—What Does the Future Look Like?"*	**Mark Dankberg** *Chairman & CEO, Viasat*

IEEE Fellows

THE IEEE GRADE OF FELLOW is conferred by the Board of Directors upon a person with an extraordinary record of accomplishments in any of the IEEE fields of interest. The total number selected in any one year does not exceed one-tenth of one percent of the total voting Institute membership. The accomplishments that are being honored have contributed importantly to the advancement or application of engineering, science and technology, bringing the realization of significant value to society. Sixteen MTT-S members were elected to the grade of Fellow, effective 1 January 2020:

Filippo Capolino	for contributions to development of electromagnetic phenomena in metamaterials and periodic structures
William Chappell	for leadership in the development of reconfigurable radio frequency and microwave systems
Xudong Chen	for contributions to optimization methods for electromagnetic inverse scattering
Jung-chih Chiao	for contributions to wireless and battery-less medical implants
Thomas Crowe	for leadership in the development of terahertz devices and instrumentation
Edward Godshalk	for development of microwave on-wafer probing and measurement techniques
Akira Inoue	for development of inverse class-F power amplifiers for mobile phones
Nuria Llombart Juan	for contributions to millimeter and submillimeter wave quasi- optical antennas
Gong-ru Lin	for contributions to ultrafast fiber lasers and highspeed laser diodes for optical communications
Kartikeyan Machavaram	for contributions to high-power millimeter wave and terahertz sources
Chul Soon Park	for development of low power millimeter-wave circuits and packages
Ullrich Pfeiffer	for development of silicon-based millimeter-wave and terahertz circuits and systems
Dennis Prather	for contributions to diffractive optical systems
Jaume Anguera Pros	for contributions to small multiband antennas for wireless telecommunication devices
Jae-sung Rieh	for contributions to silicon-germanium integrated circuits for wireless communications
Manfred Schindler	for development in microwave switch technology for radar and wireless communication systems
Shiwen Yang	for development of time-modulated antenna arrays

Outstanding Young Engineer Award

Recognizes an outstanding young MTT-S member who has distinguished him/herself through achievement(s), which may be technical (within the MTT-S Field of Interest), may be exemplary service to the MTT-S, or may be a combination of both.

Joseph Bardin

For Outstanding Early Career Achievements for Fundamental Work in the Area of Ultra-low-noise technology with Application to Emerging Sensor and Communication Systems

Joseph Bardin received the PhD in Electrical Engineering from Caltech in 2009 and joined the Department of Electrical Engineering at UMass Amherst in 2010, where he is currently and Associate Professor. His research group focuses on low temperature electronics for radio astronomy, quantum optics, and quantum computing. He is also currently with Google, where he focuses on electronics for scalable quantum computing. He is the recipient of an NSF CAREER Award, a DARPA YFA, an ONR YIP, the UMass Amherst College of Engineering Outstanding Junior Faculty Award, and a UMass Amherst Award for Outstanding Accomplishments in Research and Creative Activity.

Outstanding Young Engineer Award

– CONTINUED –

Shahriar Shahramian

For Outstanding Early Career Achievements in mm-Wave Phased-Arrays and Transceivers and for Being an Educational Role Model with the Signal Path Video Series

No bio available at time of publication.

Outstanding Young Engineer Award

– CONTINUED –

Thomas Ussmueller

For Outstanding Early Career Achievements in Fundamental Work in the Field of Microwave Technology, Especially Radio Frequency Integrated Circuits, and to Exemplary Service to the Society

Thomas Ussmueller received both his Dipl.-Ing. Degree and Dr.-Ing. Degree in Electrical Engineering from the University of Erlangen-Nuremberg, Germany, in 2006 and 2011, respectively. In 2006, he joined the Institute for Electronics Engineering as Research Assistant. After one and a half year he took over the position as Teaching Fellow and Head of the Chip Design Group. Since 2014 he is employed as Full Professor at the University of Innsbruck, Austria, leading the group for Microelectronics and Implantable Systems.

Outstanding Young Engineer Award

– CONTINUED –

Jiang Zhu

For Outstanding Early Career Achievements in Consumer Applications of RF, Antenna and Electromagnetic Devices in the Areas of Wireless Communications, Human Body Interaction and Sensing

Jiang received a B.S. degree from Zhejiang University, China, M.A.Sc from McMaster University, Canada and PhD degree from the University of Toronto, Canada, all in Electrical Engineering.

He was Senior Hardware Engineer at Apple Inc., Cupertino, 2010-2014, and founding member of Verily Life Science (formerly Google[X] Life Science) 2014-2016. He is with Google LLC, Mountain View, as Head of Wireless Hardware Group for emerging Wearables, Virtual Reality and Augmented Reality projects.

Jiang published scientific results in PRL and IEEE journals. He holds 50+ US patents. He has been Associate Editor for IEEE T-AP, AWPL and IET MAP. His research interests are mobiles, wearables, healthcare and RF-based wireless sensing.

Microwave Application Award

Recognizes the most outstanding application of microwave theory and techniques by an individual or a team of individuals.

Ming Yu

Adjunct Professor, University of Waterloo

For the Development of Computer Aided and Robotic Tuning for Filters and Multiplexers

Professor Ming Yu was COM DEV's Chief Scientist and Director of R&D and a 24-year Canadian industry veteran. He joined The Chinese University of Hong Kong as a tenured full professor in Oct 2017. He also served as IEEE Distinguished Microwave Lecturer, MTT Filter Committee Chair (MTT-8), Chair of TPC-11 and an Associate Editor of IEEE Transactions on MTT. He is a Fellow of Canadian Academy of Engineering and IEEE Fellow. He has over 150 publications and 30 patents. His PhD is from University of Victoria, BC, Canada. He is an adjunct professor at University of Waterloo.

Distinguished Educator Award

Recognizes a distinguished educator in the field of Microwave Engineering and Science who exemplifies the special human qualities of the late Fred J. Rosenbaum, who considered teaching a high calling and demonstrated his dedication to MTT-S through tireless service.

Ian Hunter

For Outstanding Achievements as an Educator, Mentor, and Role Model for Microwave Engineers and Engineering Students

Ian Hunter graduated from the University of Leeds with BSc Honours, first class, in 1978 and PhD, in 1981. From 1982-2001 he worked, in the UK and USA developing microwave filter based products for defence and communications applications, with a period at University of Bradford from 1991-95.

In 2001 he joined the University of Leeds, where he supervised over 50 PhD students. He is author of the book "Theory and Design of Microwave Filters" (IET 2001) as well as numerous papers. He was general chair of European Microwave Week, Manchester 2001, and Chair of the European Microwave Conference, London, 2016. He is a Fellow of the IEEE, the IET and the UK Royal Academy of Engineering. He is presently emeritus Professor at Leeds and a consultant to Radio Design Ltd, UK.

N. Walter Cox Award

Recognizes an individual who has given exemplary service to the Society in a spirit of selfless dedication and cooperation. The award is given in memory of N. Walter Cox, longstanding MTT-S volunteer, who had demonstrated technical, administrative, and interpersonal leadership skills before passing away early in his career.

Ryan Miyamoto

(M'97-SM'07)

For Exemplary Service to the Society in a Spirit of Selfless Dedication and Cooperation.

Ryan Miyamoto (M'97-SM'07) received the B. S. degree from the Tokyo Institute of Technology in electro-physics in 1997 and the M. S. and Ph. D. degrees in electrical engineering from the University of California, Los Angeles (UCLA) in 1999 and 2002. At UCLA, he conducted research in phased arrays and active integrated antennas.

He was a recipient of the ISAP award presented at 2000 International Symposium on Antennas and Propagation in Fukuoka, Japan. In 2001, he received the 2nd place award in the student completion held at 2001 IEEE International Microwave Symposium in Phoenix, AZ.

He is currently a senior RF research engineer at Oceanit Laboratories, Honolulu, Hawaii. He leads Oceanit's Electronic Warfare programs. At Oceanit, he developed phased arrays and RF frontend systems for EW applications under AFRL contracts. He also developed a millimeterwave scene simulator under a Navy contract. He has more than 30 publications and three US patents issued in the area of microwave and antenna systems. He serves as a reviewer for various technical journals including IEEE Transactions on Microwave Theory and Techniques and IEEE Transactions on Antennas and Propagation.

He was an Area Editor for IEEE Microwave Magazine (2007-2011). He was the Chair (2006) and co-Chair (2005) of the phased array subcommittee at the IEEE MTT-S IMS Technical Program Committee. He was also part of the review panel for the National Science Foundation (NSF) EPMD program in 2011. He is a senior member of IEEE and a member of the Association of Old Crows.

Distinguished Service Award

Recognizes significant contributions and outstanding service to the IEEE Microwave Theory and Techniques Society and the microwave profession over a sustained period of time.

Wolfgang Heinrich

In Recognition of a Distinguished Record of Service to the MTT Society and the Microwave Profession over a Sustained Period of Time

Wolfgang Heinrich received the Diploma, PhD, and Habilitation degrees in 1982, 1987, and 1992, respectively, all from the Technical University of Darmstadt, Darmstadt, Germany.

Since 1993, he has been with the Ferdinand-Braun-Institut (FBH) at Berlin, Germany, where he is the Head of the Microwave Department and the Deputy Director of the institute. Since 2008, he has been also Professor with the Technical University of Berlin. He has authored or coauthored more than 350 publications and conference contributions. His present research interests include MMIC design with an emphasis on GaN power amplifiers, mm-wave integrated circuits and packaging, and electromagnetic simulation.

Microwave Career Award

Recognizes a career of meritorious achievement and outstanding technical contribution by an individual in the field of microwave theory and techniques.

Robert Weigel

Professor, University of Erlangen-Nuremberg, Germany

For a Career of Leadership, Meritorious Achievement, Creativity and Outstanding Contributions in the Field of Microwave Theory and Techniques

Robert Weigel, Fellow IEEE and Fellow ITG, is Full Professor at the University of Erlangen-Nuremberg, Germany. He co-founded several companies some of which were later overtaken by Infineon, Intel and Apple, respectively. He has been engaged in microwave electronic circuits and systems and has published more than 1200 papers. He received the 2002 VDE ITG-Award, the 2007 IEEE Microwave Applications Award, the 2016 IEEE MTT-S Distinguished Educator Award, the 2018 Distinguished Service Award of the EuMA and the 2018 IEEE Rudolf Henning Distinguished Mentoring Award. He has been Distinguished Microwave Lecturer, MTT-S AdCom Member, and the 2014 MTT-S President.

Keynote Address #1

"Can Digital Technologies Really Change the World?"

Doreen Bogdan-Martin
Director, Telecommunication Development, International Telecommunication Union

ABSTRACT

Half the planet is now online. Great news – at least for those who can connect. But what of the rest? 3.6 billion people remain totally cut-off from a world the rest of us take for granted. Like no other technology before, digital devices, platforms and apps have unprecedented power to overcome traditional development barriers. They can bring education where there are no teachers, health advice where there are no doctors, financial services where there are no banks, libraries where there are no books. The Internet has changed our world. But its transformational potential will be magnified 1,000 times in the hands of people held back for generations through lack of access to the power of information. Digital is the transformational force that will enable us to meet the 17 UN Sustainable Development Goals by the target date of 2030. In short, the UN pledge to 'Leave No-one Behind' will mean getting everyone online.

How do we make that happen in markets where incomes are low, infrastructure is lacking, and literacy and digital skills are in short supply?

In Africa alone, connecting the continent will mean bringing 220 million new people online and an estimated US$9 billion in investment. The situation can look bleak, but sometimes a simple paradigm shift can dramatically change the picture. The interrelatedness of the SDGs provides a great opportunity for common approaches and integration within and across institutions. Coupled with policy approaches that prioritize digital skills and promote access and affordability, the power of digital could just turn out to be the power to change the world.

ABOUT THE SPEAKER

Doreen Bogdan-Martin was elected Director of the ITU Telecommunication Development Bureau in November 2018 and took office on 1 January 2019. She is a strategic leader with 30 years of high-level experience in international and inter-governmental relations, and a long history of success in policy and strategy development, analysis and execution. From 2008-2018, she led the Strategic Planning & Membership Department of ITU, and also served as Coordinator of United Nations affairs. She was one of the architects of the annual Global Symposium for Regulators and leads ITU's contribution to the EQUALS Global Partnership for Gender Equality in the Digital Age. She serves as Executive Director of the UN Broadband Commission for Sustainable Development, and is leading ITU's collaboration with UNICEF and others on the GIGA project to connect the world's schools. She holds a Master's degree in International Communications Policy from the American University in Washington, DC and a post-graduate certificate in Strategies for Leadership from the Institute for Management Development in Lausanne, Switzerland. She is an affiliate of the Harvard University Berkman-Klein Center for Internet and Society, and a Generation Unlimited Champion. She serves on a number of advisory bodies, including the Geneva-Tsinghua Initiative.

Ms Bogdan-Martin is married with four children.

Keynote Address #2

"The Broadband Space Race—What Does the Future Look Like?"

Mark Dankberg
Director, Telecommunication Development, International Telecommunication Union

ABSTRACT

Space-based internet access will grow enormously over the next decade. There are already over 2 million homes served in the U.S., Europe and Latin America - with satellite internet speeds of 100 Mbps in some areas. Satellite broadband connects ships at sea, and airplanes in flight. Several airlines offer free satellite Wi-Fi, including video streaming. With individual satellites poised to deliver multiple Terabits per second, satellite will help connect the four billion people without internet access.

Satellite broadband is like millimeter wave point-to-multipoint– but with towers orbiting earth. Architectural alternatives offer a rich and complex trade space. As with terrestrial networks, trade-offs include: geographic coverage, peak speeds, peak system throughput, latency, required capital investments, operating costs, bandwidth geographic density and bandwidth geographic distribution. The International Telecommunication Union has evolved regulations for cooperatively sharing orbital trajectories and spectrum over decades. But, conventions are being shattered by aggressive proposed "mega-constellations" of small, cheap satellites. Unregulated mega-constellations can generate space "pollution" with orbital debris, cause intolerable risks of space collisions, or even leave wide orbital regions inaccessible for decades. They also can preclude equitable access to spectrum by others.

This keynote provides a framework for considering the performance, economics, regulatory and environmental impacts of space broadband networks. We consider theoretical constraints, orbital dynamics, and underlying global bandwidth demand profiles to evaluate alternative architectures. Finally, we'll consider regulatory implications to maintain safe, fair, global competition for space-based communications, navigation/positioning, earth sensing, and the emerging near-earth space economy.

ABOUT THE SPEAKER

Mark Dankberg co-founded Viasat Inc. in 1986. He has held the position of Chairman of the Board and Chief Executive Officer of the Company since inception. Under his leadership, Viasat has received a number of company accolades, including being named to the 2019 Fortune Change the World list.

Mark is an acknowledged industry expert in the communications, aerospace and defense sectors and is the leading visionary for a new generation of ultra-high capacity satellite systems. He holds a number of patents in communications and satellite networking technologies; has participated on Department of Defense advisory panels; and has received a number of innovation leadership awards, including his 2018 induction into the CONNECT Entrepreneur Hall of Fame, 2016 Director of the Year award by San Diego-based Corporate Directors Forum, induction into the SSPI Satellite Hall of Fame as well as Via Satellite Magazine's Satellite Executive of the Year. In 2017, Mark was elected a Member of the National Academy of Engineering.

Mark began his career with the Collins Radio Division of Rockwell International, and at Linkabit Corp. in San Diego, where he held positions in engineering, technical management and business segment management. He earned B.S. EE and M.S. EE degrees from Rice University and is a member of the Rice University Electrical and Computer Engineering Hall of Fame.

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