

# IEEE Transactions on Microwave Theory and Techniques

Special Issue on

## *Microwave and Millimeter-Wave Communication and Sensor Systems*

**NEW Submission Date: 26 February 2021, Publication Date: October 2021**

### **Motivation:**

The aim of this Special Issue is to publish technical papers in microwave and millimeter-wave communication and sensor systems. In recent years, we have seen a strong resurgence in such systems due to 5G and SATCOM (satellite communications), automotive radars, precise location services, UAV tracking, imaging radars, STAR (simultaneous transmit and receive systems also known as self-duplex), power amplifiers with digital pre-distortion, antenna tuning with closed loop functions, etc. Also, silicon chips are becoming more complex with multiple transmit and receive beamforming channels, up and down-conversion mixers, synthesizers, ADCs and DACs and even digital signal processing decision circuitry all on the same die. The silicon (and III-V front-end) solutions can be considered as stand-alone and are connected to antennas (or antenna arrays) for operation. For such complex systems, it is not required to know the detailed operation of every circuit or component, and it is more important to look at the solution from a systems perspective, such as co-design of the RF blocks with the antennas and with the DSP back-end, and the decision algorithms for the respective application areas. Also, calibration and test of such complex systems is critical, and novel techniques are needed to reduce the calibration cost which can lead to a reduction in system cost. The increased impact of microwave and millimeter-wave systems is noticeable throughout society, especially in 5G communications, automotive radars, safety/security applications, and in bio-medical sensors.

### **Topics of interest to be covered by the Special Issue include, but are not limited to:**

- Systems and system-level demonstrations for communications and radar sensing, including but not limited to: active and passive phased arrays using different beamforming technologies, MIMO arrays, repeaters, self-duplex and active nulling arrays, polarization diversity, closed-loop antenna tuning solutions, dual- or multi-band arrays, reconfigurable arrays, calibration and test techniques, etc. Applications for 5G, point-to-point links, SATCOM, automotive radars, position sensing, and other standards are especially welcome.
- System-level integrated circuits and/or sub-systems using multiple chips, including but not limited to: communication and radar chips with multi-channel transceivers, power amplifiers with wideband digital pre-distortion and envelope tracking, signal cancelling chips for self-duplex systems at the RF, IF and DSP level, and other complex systems on a chip. Circuits using solid-state (BiCMOS, SiGe, CMOS, SOI CMOS, GaAs, GaN and any combination) and non-solid-state technologies (RF MEMS, BST, liquid crystal, phase-change, etc.) are solicited.
- Packaging and module technologies, including but not limited to: complex packaging design for multifunction wideband systems, high power/thermal considerations, module

technologies for receivers and transmitters, antennas-in-package and wafer-scale systems.

- Review papers, including but not limited to: papers summarizing the state of the art in automotive radars, SATCOM, 5G, point-to-point links, sensing systems, power amplifier digital predistortion, etc. are also encouraged. Potential authors should contact the editors to discuss their submission and to get approval for this special category.

Authors must consult the link <https://www.mtt.org/author-information-transactions/> for submission instructions.

### **Guest Editors**

Prof. Gabriel M. Rebeiz  
University of California, San Diego, USA  
[rebeiz@ece.ucsd.edu](mailto:rebeiz@ece.ucsd.edu)

Prof. James F. Buckwalter  
University of California, Santa Barbara, USA  
[buckwalter@ece.ucsb.edu](mailto:buckwalter@ece.ucsb.edu)