

# Distinguished Lecture

Friday, April 13

1 p.m.

3043 ECpE Building Addition



**Gabriel M. Rebeiz:** Wireless Communications Industry Endowed Chair and Distinguished Professor of Electrical and Computer Engineering at University of California, San Diego

## Advanced 5G Phased-Arrays and Transceivers Using Silicon Technologies: THE END OF THE MARCONI ERA IS NEAR

**ABSTRACT:** During the past 50 years, phased-arrays have been largely developed for the defense sector. Today, due to the increased demand for data, there is a need for base-station and mobile-user phased-arrays which can provide high-capacity data services through directional links. Therefore, there is an amazing investment by the telecom industry in this sector at highly accelerated time scales (24-36 months) to meet the commercial demand. Today, both digital-beamforming at the element level (sub-6 GHz) and hybrid (i.e. analog/digital) beamforming for the mm-waves bands are being developed for next-generation 5G telecom systems. These commercial investments are leading to dramatic changes in phased-arrays: High EIRP, high-performance systems at 28 GHz, 39 GHz and even 60 GHz, and with multiple beams, are now available at low-cost (<\$1K). This talk will summarize our work in this area, and present a roadmap for the future.

**BIO:** Prof. Gabriel M. Rebeiz is Member of the National Academy, Distinguished Professor and the Wireless Communications Industry Endowed Chair at the University of California, San Diego. He is an IEEE Fellow, and is the recipient of the IEEE Daniel E. Nobel Medal, the IEEE MTT Microwave Prize (2000 and 2014), the IEEE MTT 2010 Distinguished Educator Award and the IEEE Antennas and Propagation 2011 John D. Kraus Antenna Award. His group has led the development of complex RFICs for phased array applications from X-band to W-band, culminating recently in wafer-scale integration with high-efficiency on-chip antennas. His phased array work is now used by most companies developing complex communication and radar systems. He has graduated nearly 100 PhD students and post-doctoral fellows.

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