Special Issue

Millimeter- and Terahertz-Wave Antennas and Phased Arrays for Ultra-Broadband Wireless

Message from the Guest Editors

Microwave, millimeter-wave (mmW), and terahertz (THz) frequency bands are being pursued for beyond 5G, enabling ultra-broadband wireless communications to unlock 100 GB/s data rates. Because these bands all together occupy but a tiny fraction of the electromagnetic spectrum, photonics technologies can be used to efficiently propagate and manipulate these signals. In fact, photonic technologies have already demonstrated broadband signal generation, up- and down-conversion, as well as true-time-delay beam-forming of phased array antennas. The purpose of this Special Issue is to highlight a broader view of the current state-of-the-art in crucial developments to enable photonics-driven beam-forming and beam-steering phased array antennas. Particularly, the focus is placed on covering integrated microwave photonic approaches, in which photonic integration technology is employed to overcome the energy-efficiency, flexibility and scalability, as well as performance limitations of the current systems using fiber-optic components. The topics covered also include additional key technologies, such as novel antenna approaches and dielectric waveguide structures.

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