

SEMINAR

Millimeter-Wave Antennas for Next Generation Telecommunications Networks

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Abstract: In this talk, I will describe my research efforts in millimeter-wave antennas for next generation telecommunications networks for high data-rate communication links. Millimeter-wave antennas are key to deploying next generation 5G networks and satellite systems that promise broad bandwidths and smart data links for mobile users. In collaboration with major industrial and academic partners, I recently proposed quasi-optical planar systems as efficient beam formers for multi-beam, wide scanning antennas. Such an approach overcomes the loss and prohibitive cost associated with phased arrays in the millimeter wave range, while preserving the agility of the radiating unit. Low-cost implementations of the proposed system in substrate integrated waveguide (SIW) and low temperature co-fired ceramic (LTCC) technologies will be presented in V and E bands for 5G networks. For satellite links in Ka-band, I will show that these quasi-optical planar systems can be used to drive the focal array of a multi-reflector system. Such a configuration reduces the phase aberrations of multi-reflector configurations for high data rates and wide coverage. For terminal users, I will present some recent activities on wideband wide-angle continuous stub arrays. I will introduce the unique scanning and bandwidth capabilities of such arrays validated by a prototype.

Bio: Dr. Mauro Ettore received a Laurea degree “summa cum laude” in Electrical Engineering and a Ph.D. in Electromagnetics from the University of Siena, Italy, in 2004 and 2008, respectively. In 2014, he assumed responsibilities for the multi-beam antenna activity for satellite applications in the joint laboratory between IETR and Thales Alenia Space, France. In 2015, he was an invited professor at Tokyo Institute of Technology, Japan. Since 2016, he has been member of the French National Committee for Scientific Research, Section 08 (micro- and nanotechnologies, photonics, electromagnetism), CNRS, Paris, France. In 2017, he leads the BEAMS (BEam Antennas up to Mm and Sub-mm waves) team at IETR. Since 2017, he is an Associate Editor for the IEEE Transaction on Antennas and Propagation. Dr. Ettore’s research interests include the analysis and design of leaky-wave antennas, periodic structures, millimeter-wave antennas, non-diffractive radiation, near-field focusing techniques, and wireless power transfer systems.

Organizers

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Seminar in English

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