

Example of internship subject for M2 students

(this is not an internship offer, but it is a typical example of research subject proposed to M2 students)

Laboratory: CEA-LETI

Subject : Integrated antennas for future communication systems at millimeter-wave frequencies

Context of the internship

CEA-LETI is involved in research activities in the domain of millimeter-wave communications (24 GHz, 30-40 GHz, 60 GHz, 71-86 GHz), which will address today a variety of applications including local area networks (e.g. WiFi), and future cellular networks (5G). Part of our activities in this area deal with antenna design and integration in different technologies (silicon, ceramic, organic materials) with the objective to design fully-integrated Transmit/Receive modules.

Objectives

The objective of this internship is to contribute to the design of innovative integrated antenna arrays using a state-of-the-art integration technology and aiming at implementing a novel scalable architecture of phased-array antenna at 60 GHz.

Part of the work will involve the experimental characterization of antennas in this frequency band (impedance and radiation pattern measurement); in this domain, existing antennas will be characterized and specific developments will be carried out to provide evolutions of the experimental testbed.

The candidate is expected to have a proven background/education on antennas and electromagnetism as well as an experience on electromagnetic simulation and an interest for electromagnetism, experimental work, scientific rigor, and technology research.

References

L. Dussopt, "Millimeter-Wave Technologies for 5G: Opportunities, Challenges and path toward Standards", 2015 European Conference on Networks and Communications (EuCNC 2015), Paris, France, June 29-July 2, 2015.

L. Dussopt, O. El Bouayadi, J. A. Zevallos Luna, C. Dehos, Y. Lamy, "Millimeter-Wave Antennas for Radio Access and Backhaul in 5G Heterogeneous Mobile Networks," 9th European Conference on Antennas and Propagation, Lisbon, Portugal, 12-17 April 2015.

C. Dehos, J. L. González, A. De Domenico, D. Ktésas, and L. Dussopt, "Millimeter-wave access and backhauling: the solution to the exponential data traffic increase in 5G mobile communications systems?," IEEE Communications Magazine, vo. 52, no. 9, Sept. 2014, pp.88-95.