PhD THESIS

Circularly-Polarized High-Gain Broadband Leaky Wave Antennas for Space Applications

- **Laboratory**
  - Institut d'Électronique et de Télécommunications de Rennes (**IETR**), UMR CNRS 6164. Rennes, France. www.ietr.fr

- **Doctoral school**: MATISSE (http://matisse.univ-rennes1.fr/)

- **Keywords**
  Leaky-wave antennas, Satcom links, frequency scanning antennas, circularly-polarized antennas.

- **Context and overview of the problem**

  Novel antenna architectures are required for next generation Satcom link for high data links around the world. These solutions should reduce the cost of the antenna terminals with enhanced radiation performance in terms of gain, loss, polarization purity and mass.

  This PhD project will address the possibility to use leaky-wave antennas for space applications. The project is in collaboration with Thales Alenia Space (TAS), Toulouse, France in the framework of the common laboratory MERLIN between TAS and IETR.

  The PhD candidate will investigate the possibility of engineering the dispersion properties of leaky-wave antennas to achieve high gain antennas in circular polarization.

  Design techniques and electromagnetic tools will be developed during the thesis. Prototypes will validate the full approach.

- **Main goals**
  The PhD project addresses three major goals:
  ⇒ To engineer the dispersion properties of leaky-wave antennas for high gain solution for space applications.
  ⇒ To achieve high gain leaky-wave antennas in circular polarization with a high polarization purity.
  ⇒ To prototype and validate experimentally the numerical results and approach.

- **Location and supervision**
  The PhD project will be held at the IETR, Rennes. The main supervisors of the PhD student will be Mauro ETTORRE, IETR, HDR, CR1 CNRS (mauro.ettorre@univ-rennes1.fr) and Ronan SAULEAU, IETR, Professor (Ronan.Sauleau@univ-rennes1.fr).

- **Candidate profile**
  The PhD candidate should hold a MSc degree M2R in electrical engineering, physics or an equivalent title recognized by the doctoral school MATISSE. In particular, he should master electromagnetic theory, physics, and mathematics. A good level of spoken and written English is required.

- **Application**

  Interested candidate should send a detailed CV and motivation letter by email to Mauro ETTORRE (mauro.ettorre@univ-rennes1.fr) and Ronan SAULEAU (ronan.sauleau@univ-rennes1.fr).