



PhD offer

Contribution to the calibration process of a 3D mmw channel sounder and channel model extraction

Project context

Trains are entering the era of full automation thanks to wireless systems shifting control functions from the human driver to computers. High data rate, robustness, high reliability and ultra-low latency are required. The Future Railway Mobile Communication System (FRMCS) is under development at European level. The objective in considering mmW is to improve the communication system adaptability for full bearer independency. The 60 GHz band is of great interest for railway in case of very high data rate and very low latency requirements. The environment (ballast, cutting, tunnels, high voltage near the antennas, dust, interferences, *etc.*) as well as the constraints (vibrations of the trains, non-line of sight situations, crossing of trains, cohabitation with other systems, *etc.*) are very specific and will impact the performances of the wireless links for both Train-to-Infrastructure (T2I) and Train-to-Train (T2T). The propagation conditions and channel behaviour have to be well known to avoid communication outages particularly in the context of mobility. Dedicated channel models for mmW in railway environments are needed. This thesis is in the framework of a national research project: mmw4rail in collaboration with the university Gustave Eiffel, Merce, the university of Haut de France.

Objectives of the PhD offer

A mmw channel sounder is currently designed in the research laboratory Lab-STICC/IMT Atlantique. The PhD student will contribute to the evolution and improvement of this mmw channel sounder. The calibration is a critical part that could be proceed to measure geometrical channel impulse response. The PhD student will participate to the evolution of the mmw sounder, the calibration process. From measurement campaign, he will process the data measurement to extract the 3D channel response.

Candidate

- Required education level: Master or equivalent degree in electrical engineering or physics.
- Duration: 36 months.
- Required background: RF propagation, antenna theory, microwave engineering, basic knowledge with Python
- Knowledge of French is not required.

Start date: November 1st, 2021.

Location : Brest – France

Contact persons

To apply please send your motivation letter, CV, and recommendation letters (optional) to:

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