

Student Project Proposal

Project title: **Reconfigurable subarray for mmW 5G communications**

Project type: **Master Thesis Project**

Faculty and Laboratory: STI, Microwaves and Antennas Group (MAG)

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Project description

The stringent requirements of 5G communications drive the use of millimeter waves (mmW) in the so-called frequency range 2 (FR2) of 5G. Beamforming is widely acknowledged as a required feature for Advanced Antenna Systems (AAS) operating in 5G-FR2. Even with the emergence of integrated circuit (IC) phase shifters (PS), costs, energy consumption, and integration complexity are still a limitation for the massive deployment of AAS in the mmW.

Reconfigurable antennas (RA) are an attractive alternative for providing beam-steering while reducing the required number of IC-PS. RAs also are appealing against alternatives like passive feeding arrangements because of their lower profile and smaller footprint.

The goal of this project is to realize a radiation pattern reconfigurable antenna subarray operating in the 24–32GHz range.

Type of work: Theory 30%, Simulation 30%, Fabrication and measurements 20%, Documentation & Reporting 20%

Student tasks

- Design of a radiation pattern reconfigurable subarray.
- Fabrication of a prototype (depending on time availability).
- Measurement and characterization of the prototype (depending on time availability).
- Writing a report with the results.