

Cycle of studies: Bachelor LT

Degree course: Physics

Title of the thesis: Characterization of the new microwave reflectometer for plasma position on RFX-mod2

Type: experimental

RFX Supervisor: Gianluca De Masi, Roberto Cavazzana

Academic supervisor: Matteo Zuin

Head of the RFX research group: Matteo Zuin

Leader of the RFX research program: Lionello Marrelli

Description of the thesis:

The RFX-mod2 experiment is in its completion phase and, among the diagnostic systems, a microwave reflectometer for the plasma position measurement in Tokamak configuration is present. Such a system aims at providing a real-time estimate of the vertical and horizontal plasma position, exploiting the microwaves reflection without relying on magnetic sensors that, in presence of high neutron flux, can be severely limited.

The diagnostic setting-up involves a series of tests for the characterization on the bench of the received signal through a movable reflecting mirror mounted on an optical rail and the comparison of different antenna configurations produced via additive manufacturing.

The activity work will, thus, involve: the participation to the set-up of the system on the bench (reflectometric and launcher/receiver units); the collection of the experimental data through dedicated measurement campaigns; the analysis of the received signal through Python.

Previous experience (if necessary): Python programming language (basic level)

Date: 23/12/2021

Status: available

Name of the student: (when assigned)