

Universität Stuttgart

Institut für Robuste Leistungshalbleitersysteme

Mathias Scharpf, M.Sc. Pfaffenwaldring 31, D-70569 Stuttgart, mathias-pius.scharpf@ilh.uni-stuttgart.de +49(0)711 / 685 60817

16.04.2025

Background:

In our laboratory, we are developing an algorithm for the linearization of power amplifiers using a socalled LRFIC (Linearizer RF IC). The adjustment algorithm optimizes the output intermodulation products of the system by selectively controlling individual system components. The aim is to create a modular, user-friendly interface that controls the algorithm, visualizes measurement results and controls system parameters via an API.

Objective of the work:

The aim of this work is to create an intuitive GUI that fulfills the following tasks:

- Control of the adjustment algorithm (start, stop, parameter selection)
- Display of measurement results (e.g. IM3, IM5, phase positions, gain)
- Interactive change of control variables (e.g. phase, level, filter)
- Visualization of the optimization progression (e.g. progression of IM3, IM5)
- Communication with the backend (e.g. via Python API)



HiWi/ Bachelor/ Researchproject

vacancy

,

HF

Development of a graphical user interface (GUI) for the control and visualization of an MMIC matching algorithm

Task:

- Familiarization with the existing Python backend and the matching algorithm
- Conception and design of a GUI layout (e.g. with PyQt, Tkinter, etc.)
- Connection of the user interface to the API system for controlling the system components
- Implementation of live diagrams (e.g. with matplotlib, Plotly or pyqtgraph)
- Integration of logging and export functions (CSV, PNG etc.)
- Carrying out tests on the real system

Requirements:

- Good knowledge of PythonExperience with GUI frameworks (e.g. PyQt5, Tkinter)
- Basic understanding of signal processing or RF systems is an advantage
- Structured and independent way of working

Supervision & general conditions:

- Start: as soon as possible (by arrangement)
- Duration: approx. 3 6 months (e.g. as a Bachelor/research/HiWi thesis)