

Master-Thesis

Programmable impedance match in passive RF mixers

Whenever information needs to be extracted from electro-magnetic waves, mixers can be found. In communication, imaging and material characterization, mixers are the interface between the analog and digital domain. The selection of frequencies e.g. in radios is typically done on the RF side of the mixer.

In recent years, however, new approaches in baseband design were introduced. Here, the band selection is done in the baseband and the respective impedance is then upconverted into the RF band.

In this master's thesis, the principles of baseband to RF band mixing should be investigated in circuit simulations. This approach is promising for e.g. multi-color imaging or broadband spectroscopy to alleviate the challenges on the RF side.

Requirements:

- Experience in analog circuit design
- Knowledge of transistors and basics of impedance matching

After completion of this thesis, the student will be proficient to work in following fields:

- Automotive Radar
- Material science
- Communication

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