

Master-Thesis

Time-frequency analysis of Terahertz sources

For circuits at frequencies above 100 GHz, oftentimes only the spectrum is taken into consideration. However, similar to digital circuits, the time-dependence of integrated circuits also gives additional information, but has remained an unexplored area so far. By using known principles of time-frequency analysis in a new field, information such as start-up time or time-dependent spectral responses can be extracted.

In this thesis, a time-frequency analysis is to be implemented on the signal processing side in combination with state-of-the-art measurement equipment to extract signals at frequencies around 500 GHz. The student can explore the known algorithms in combination with actual measurement data to extract new information from known circuits.

Requirements:

- Experience in signal processing using Matlab
- Knowledge of basic circuits

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

- Automotive Radar
- Signal Processing
- High-frequency characterisation

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