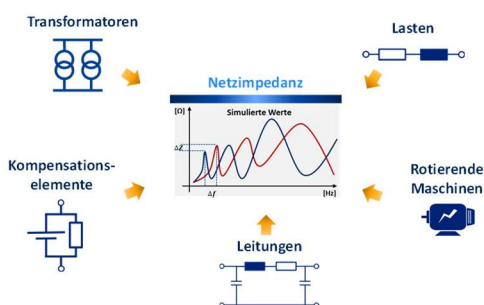


## Bachelor thesis

# Identification and parameterisation of models for modelling the impedance behaviour of network components

In the process of the energy transition, converter-based systems are becoming increasingly common in low-voltage grids. Their behaviour can significantly influence the voltage quality and is the focus of research in order to be able to guarantee grid stability and supply quality with further expansion of renewable technologies.

In order to identify potential risks, extensive network impedance calculations must be carried out. The quality of these calculations is largely determined by the complexity of the component models. These models sometimes require very specific data, such as geometric arrangements of conductors or the exact composition of different load types. In reality, these data are often only incompletely available.



It is therefore necessary to investigate which level of detail is required for different components and which data or parameters are necessary for this.

Within the scope of this work, suitable frequency-dependent models for the representation of network components are therefore to be identified.

Subsequently, the necessary level of detail is to be evaluated through comparative simulations.

### Core tasks and objectives of the thesis

- Literature research on frequency-dependent component models and their parameterisation
- Sensitivity analysis to evaluate the influence of different models

### Your profile

- Study of computer science or engineering (electrical engineering, computer science, mechanical engineering, power system engineering).
- You are interested in current research topics related to the energy supply of the future
- Knowledge of C++ and/or Python is advantageous

### Contact



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### Focus



- Component modelling
- Grid impedance calculation
- Sensitivity analysis