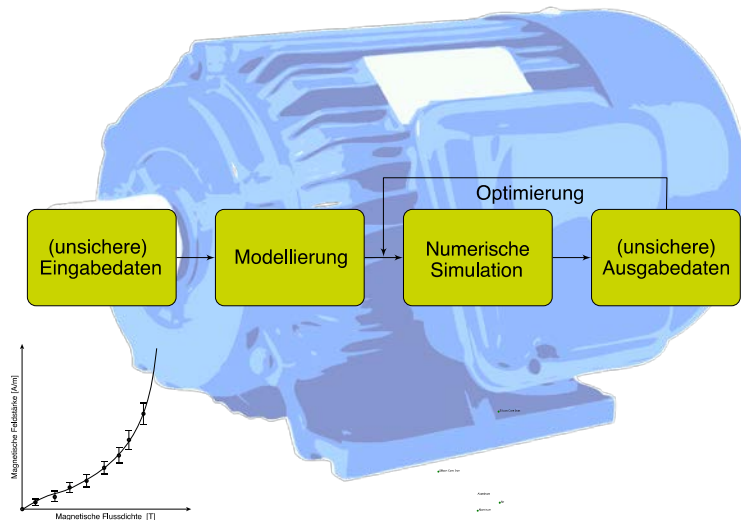


**Subject:** Uncertainty quantification for electrical machines

**Research Focus/  
Cross-sectional Area:** Uncertainty quantification



**Description:**

An important step in the energy transition to a more sustainable economy are efficient electromechanical energy transducers. Robust designs of electric machines that remain efficient also in rare scenarios become more and more important. For example in the automotive industry, industrial automatization or in household appliances devices need to operate closer to the physical limit.

The Focus of this proposal is the development of methods and models for electrical machines that take uncertainties, e.g., manufacturing imperfections, into account and unlock more robust designs.

Classical methods from uncertainty quantification can be adapted but further research is necessary to allow for realistic scenarios. This project is in cooperation with the Robert Bosch GmbH and CST - Computer Simulation Technology AG.

**Requirements:**

An excellent Master's degree in engineering or mathematics. Knowledge in basic physics (electromagnetics), space and time discretization methods (e.g. FEM, Runge-Kutta) and stochastics is beneficial.

**Supervisors:** S. Schöps, Computational Engineering