

## Bachelor-/Masterarbeit am Fachgebiet Leistungselektronik:

*Bearbeitungszeit:* 20 Wochen (Bachelorarbeit)/ 26 Wochen (Masterarbeit)  
*Sprache:* Deutsch/Englisch  
*Start:* ab sofort  
*Betreuerin:* Xiaomeng Geng  
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Raum: E 13a

*Arbeitstitel:*

**„Untersuchung der Temperaturabhängigkeit des dynamischen Durchlasswiderstandes von GaN-Transistoren“ /**

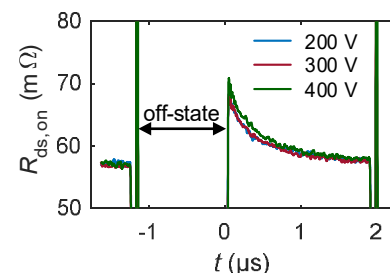
**“Investigation of the temperature dependence of the dynamic on-resistance in GaN-transistors”**

### Motivation:

With the growing requirements for volume, integration and efficiency, GaN devices are increasingly utilized to design high-efficiency and high-frequency power converters due to their advantages including low parasitic capacitance, no reverse recovery charge, easily integrated lateral structure and high thermal conductivity in comparison to Silicon counterparts. In order to better apply GaN devices, it is necessary to investigate the characteristics of GaN devices comprehensively, which are affected also by temperature. The main task of this thesis is to build a temperature controller to study the impacts of temperature on characteristics of GaN-transistors.



temperature captured by Infrared Camera



dynamic on-resistance in double pulse test

### The aims of this thesis including:

- Develop a microcontroller program to control the temperature
- Design and implement a hardware system to connect the microcontroller with the heatplate, which is used to heat GaN-transistors
- Build a user interface using LabView
- Measurements of GaN-transistors with the temperature controller