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FAKULTÄT FÜR ELEKTROTECHNIK  
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LENA

# Bachelor thesis

for Ms./Mr. xx xx

**Topic:** Evaluation of the Measured Signal of a Partial Discharge Sensor

**Task:**

Partial discharge detection is a common method for monitoring the condition of high-voltage electrical equipment, such as medium-voltage cables. Partial discharges generate transient voltage pulses in the nanosecond range and with low amplitude and are an indicator of an insulation defect. With the help of a suitable partial discharge sensor, the pulses can be detected in real time. To do this, the measured voltage signal must be processed to capture and store the amplitude and timing information of the pulse. The processed information must then be communicated to the distribution system operator so that he can set up permanent condition monitoring.

The aim of this work is the development and evaluation of an algorithm to evaluate a measured voltage signal. The measured signal is to be continuously monitored for partial discharge pulses. If partial discharges are detected, the relevant pulse parameters are to be recorded and processed for communication with the distribution system operator. Based on the measurement, a criterion for evaluating the condition of the monitored cable is to be developed.

The study has to cover the following points:

- Literature research on communication between sensor and distribution system operator
- Development of an algorithm to evaluate the measured voltage for partial discharges
- Define criterion for evaluation of cable condition (like traffic light)
- Define and implement interface between sensor and distribution grid operator
- Documentation of the results

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