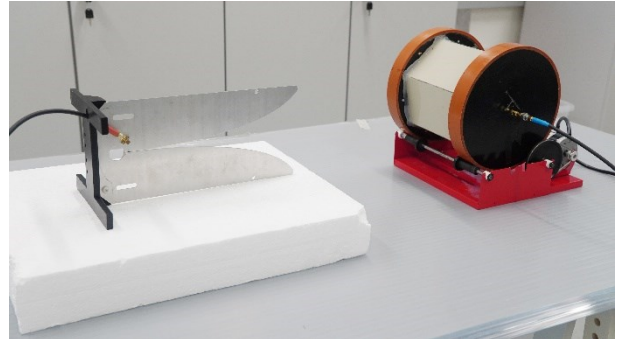


# BS or MS thesis: Experimental Study on electrostatic charging and associated damage to GHz electronics



## Motivation

You carry a backpack and it contains e.g., a cell phone, some plastic parts and metal objects like keys. The moving of the parts in the backpack can create charges and voltages between the metal objects. Upon contact of the metal parts, small sparking occurs. This creates GHz electromagnetic pulses. The pulses can damage modern sensors used e.g., in cell phones.

You will learn how to create and quantify these pulses which extend up to 10 GHz using an existing test setup that allows to create the mechanical movement and to capture pulses. The analysis of the data is explicit, e.g., spectral content, and statistical, like occurrence rate of pulses. We will further subject sensitive sensors to the pulsed fields to verify that the simulation models, which predict failure rates are sufficiently accurate. You can expand this into the direction of the measurements, or the simulations.

## You will learn

- GHz speed time domain measurement techniques
- Many things about antennas
- Tribocharging, e.g., how different materials charge up if they are rubbed against each other
- Instrument control and data processing
- Usage of electromagnetic simulation tools
- This work will lead to conference and journal publications.

## Organizational matters

- Start: as soon as possible at the Institute of Electronics

## Contact/Supervision

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