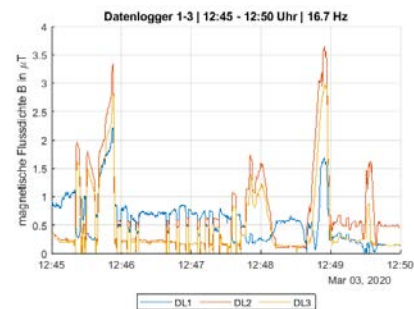
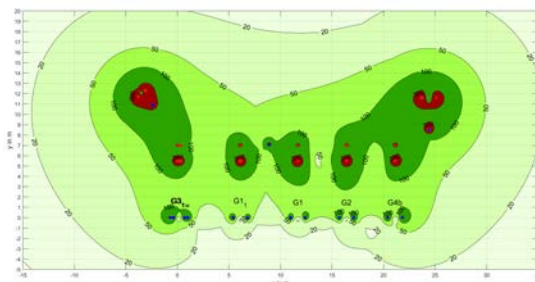


Master Thesis

Measurement & Simulation of electromagnetic fields of railway systems

Motivation



In multi-track electric railroad systems, there are various sources of electromagnetic fields. Measurements are to be carried out in the railroad area in order to analyze the influence of these sources. The train position is to be taken into account.

Research questions

- How does the train position affect the current distributions and therefore subsequently the magnetic fields?
- Which currents must be assumed in a simulation in order to obtain representative values (maximum values, average values)?
- What is the best way to position measuring devices in order to obtain a picture of the exposure that is as representative as possible?
- Can the distribution of the fields be represented in a statistical approach?

Procedure/Methodology/Task definition

- Synchronous measurement of electromagnetic fields with data loggers, recording of train positions
- Simulation of the electromagnetic fields
 - o MATLAB® (corresponding functions for the calculation of the fields are already available)
 - o XGSLab
- Current measurement as far as possible

Organisational Issues

Start Immediately. Language: English (preferred)

Contact Person/Supervisor

Benjamin Jauk | benjamin.jauk@tugraz.at | +43 316 873 7554
 Katrin Friedl | katrin.friedl@tugraz.at | +43 316 873 7552