The overarching aim of the project is to create a platform for a stage spotlight with the behavior expected of such a system in regards to movement characteristics.
As the mechanical platform is provided for the project, the main challenges arise from the theoretical system, control design and software engineering required to materialize the platform.
These challenges include:

- What are the desired performance requirements for a spotlight?
- In what ways can a system of this type be controlled?
- How are control engineering theory implemented on a microcontroller?
- How can a system allowing hardware control of the given platform be designed?

In order to provide a satisfactory answer to the above questions, the design of the FPGA modules, microcontroller software and control engineering theory will be covered in the following report.

0.1 System requirements

The theoretical usecase of the system is as mentioned a stage spotlight. The system requirements have be rather hard. Overshoot is undesirable as a spotlight is placed rather far away from the stage. Even a 1% overshoot could result in a sizeable overshoot at the target. This

- No overshoot.
- Maximum 1 second risetime.
- 1 % settling time of 1.2 seconds.