TUM Hyperloop Program
TUM School of Engineering and Design
Technical University of Munich

TUM Hyperloop: Simulation of a Linear Switched Reluctance Motor

Type: Master Thesis
Content: theoretical
Possible start: February 2024

TUM Hyperloop Program

The Assistant Professorship of Sustainable Future Mobility is one of several chairs and professorships contributing to the TUM Hyperloop Program. Within the scope of this research project, a full-scale Demonstrator for a climate-neutral, ground-based transportation system, meeting the demand for ultra-fast connections between mobility hubs, has been developed. This prototype uses electromagnetic suspension and propulsion and operates in a partly evacuated environment to minimize friction.

Job Description

As part of the TUM Hyperloop team, you will be working alongside motivated students and researchers on our site in Ottobrunn. Your task will be the analysis of a linear switched reluctance motor for Hyperloop. This includes being able to compare the operating principle of this motor with other types. A preliminary design is to be developed, focusing on electromagnetic simulations using Ansys Maxwell. Your daily workplace will be in our offices in Ottobrunn.

Your Tasks

- Understand the working principle of different types of motors.
- Work out the advantages and disadvantages of the different motor types.
- Electromagnetic simulations of a linear switched reluctance motor (FEM).
- Preliminary design of a linear switched reluctance motor (CAD).

Our Requirements

- Solid basic understanding of engineering science.
- Interest in electromagnetic fields and their generation.
- Being familiar with the functionality of electric motors.
- Experience with finite element analysis (FEM) and/or CAD.
- High motivation with enthusiasm to make an impact.
- Perseverance to finish tasks on time and to take responsibility.

Our Offer

- Working with students in a highly motivated young research team.
- Helping to shape the next-generation passenger transport system.

Contact

If you are interested in working in our team, please send your application together with a motivation and supporting documentation to Tim Hofmann (tim.hofmann@tum.de). If you have any questions, do not hesitate to contact us.

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