



Universität Stuttgart
Institut für Kernenergetik
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Forschungs- und Lehrgebiet
Thermofluidynamik

Studien- /
Masterarbeit

**Data-driven
approach for heat
transfer
prediction from a
Thermosiphon
system**

Aim:

The aim of this thesis is to develop machine learning based model for the heat transfer prediction of a Thermosiphon system.

Description:

Passive, self-sustaining heat removal systems can be applied in spent fuel pools as a redundant, inherently safe heat removal system. Within the scope of this research project, experimental investigations are performed to characterize the heat transfer behavior of long heat pipes and thermosiphons and a comprehensive experimental database is generated. As an innovative approach, we plan to develop and extend machine learning based algorithms, which will be purely data-driven. The work will mainly emphasize on the application of deep neural network (DNN) using the TensorFlow library. It is also planned to do a comparison between commonly used correlations and DNN.

Requirements:

- Basic knowledge thermo-fluid dynamics.
- Nice to have: Basic knowledge of Python, machine learning and data processing.

Start:

As early as possible

Language of instruction:

English

Supervisor:

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