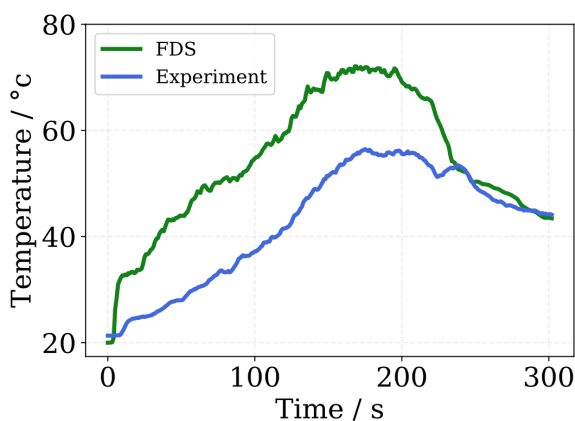


MASTER THESIS

Validation of the numerical modeling of test fires according to EN 54



The chair of Computational Civil Engineering (CCE) at the University of Wuppertal and the Institute for Advanced Simulation (IAS-7) are working on the development and validation of simulation tools for pedestrian and fire dynamics. A central parameter that is relevant for emergency escape concepts is the visibility in case of fire. The products of combustion and the resulting opacifying effect are primarily dependent on the fuel-specific combustion reaction. In order to evaluate the performance of smoke detection systems, various liquid and solid fires are standardized in EN 54, which can also be used to evaluate visibility criteria in case of fire. These fires can be modelled with the Fire Dynamics Simulator (FDS), which provides both simplified and complex methods for modeling combustion processes.



This work focuses on the modeling of fires standardized in EN 54 and the subsequent comparison with existing experimental data as well as the comparison of the different modeling approaches. The comparison is to be carried out in spatial as well as temporal dependence on different criteria such as light obscuration or gas temperature (see figure). What we expect from you:

- basic knowledge in CFD
- basic knowledge in technical combustion
- prior knowledge in FDS (helpful)
- prior knowledge in Python (helpful)

