

# MASTERARBEIT (MA BI) MASTER THESIS (MA CE)

## Global fire analysis of steel structures

Fire hazard plays an important role in the design of building structures with significant socio-economic consequences and loss of lives. Due to a rising number of fire incidences, the need for scientific research on local and global structural fire behavior has increased over the years. Structural fire safety science and a deep understanding of the local and global structural fire performance are the key issues to achieve better fire safety of the building environment in a cost-effective way for society.

In this thesis, a student should perform an advanced global fire analysis of steel structures with consideration of a detailed heat transfer analysis in the structure as well as the time- and rate-dependent effects. Different numerical procedures, fire scenarios and input parameters have to be investigated. The master thesis includes the following sub-tasks: detailed study of state-of-the-art in fire design of steel structures; detailed procedure of heat transfer analysis in ABAQUS; analytical and numerical modeling of creep and relaxation effects in the chosen material model; performing the structural fire analysis for different benchmark structures.

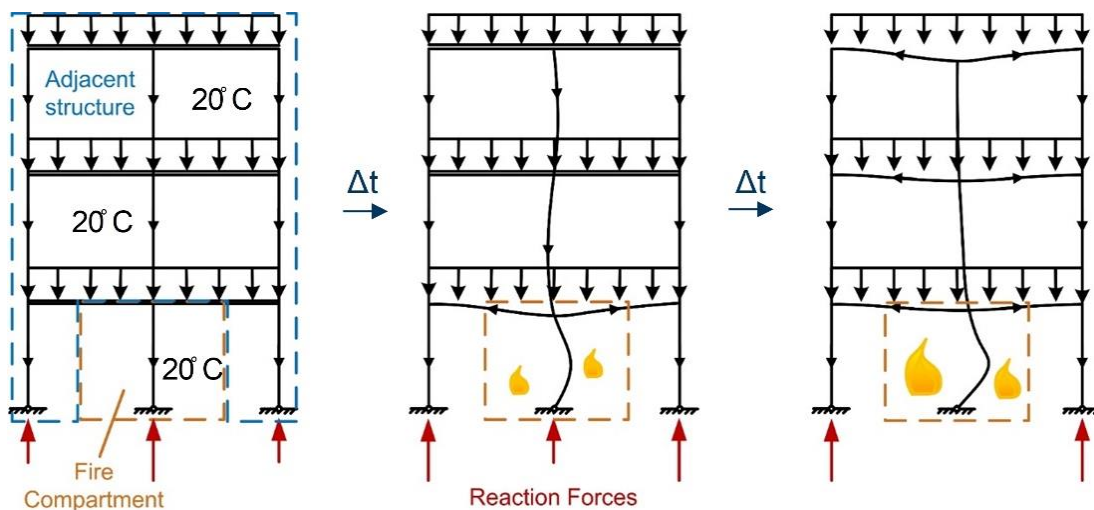


Fig. 1. Performance of large-scale structures in fire

If you are interested in doing this master thesis in cooperation with our chair, please contact [Mr. Numanovic](#) (IC 5-83) or [Mrs. Faghihi](#) (IC 5-81). Consultation hours are **Tuesdays and Wednesdays** from **13:00 to 14:00**.

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