

**PhD student seminar on fire
simulation, hosted by HSE**

Report of Contributions

Contribution ID: 1

Type: **not specified**

Welcome and Introduction

Thursday 2 February 2017 10:15 (30 minutes)

Participants are welcomed at CERN and an introduction to CERN and safety at CERN is given.

Presenter: LA MENDOLA, Saverio

Session Classification: Introduction

Contribution ID: 2

Type: **not specified**

Towards smoke and fire simulation with grid adaptive FEM

Thursday 2 February 2017 10:45 (30 minutes)

The status of a newly developed CFD framework with grid adaptive FEM will be presented, which includes the verification of its flow solver as well as scaling on the JURECA supercomputer.

Presenter: FEHLING, Marc

Session Classification: Presentations of the first day

Contribution ID: 3

Type: **not specified**

JuROr —Real-Time Simulation and Prognosis of Smoke Propagation using GPUs: Towards 3D and complex geometries

Thursday 2 February 2017 15:15 (30 minutes)

After a short introduction of the project's motivation, the applied methods and tools for real-time smoke simulation are introduced.

Then, acceleration results for 2D and 3D test cases are shown and next steps towards complex geometries are touched on briefly.

Presenter: SEVERT, Anne

Session Classification: Presentations of the first day

Contribution ID: 4

Type: **not specified**

Optimization strategies in fire simulation

Thursday 2 February 2017 16:15 (30 minutes)

A Comparison of different optimization algorithms for material parameter estimation is presented. The presentation covers the overall workflow in a parallel computing environment, the performance and accuracy of the algorithms and their special characteristics.

Presenter: LAUER, Patrick

Session Classification: Presentations of the first day

Contribution ID: 5

Type: **not specified**

Application of experimentally determined combustion efficiencies in a FDS-Model

Thursday 2 February 2017 15:45 (30 minutes)

Finding an appropriate method to use combustion efficiencies in an FDS-Model.
Investigate the influence of different combustion efficiencies on the temperature rise inside a building component.

Presenter: KUSCHE, Christian

Session Classification: Presentations of the first day

Contribution ID: 6

Type: **not specified**

Material Parameter Optimisation for Cable Fire Simulation

Thursday 2 February 2017 17:00 (30 minutes)

An overview on simulating the cone calorimeter test in FDS is given. Based on data from the CHRISTIFIRE project, an evolutionary algorithm is used to create input parameter sets to be used in large scale fire simulation, later on.

Presenter: HEHNEN, Tristan (Bergische Universitaet Wuppertal (DE))

Session Classification: Presentations of the first day

Contribution ID: 7

Type: **not specified**

Simulation of organic peroxide fireballs using ANSYS CFX

Thursday 2 February 2017 17:30 (30 minutes)

Simulation of organic peroxide fireballs with ANSYS CFX and comparison to experimental data.

Presenter: BLANKENHAGEL, Paul

Session Classification: Presentations of the first day

Contribution ID: 8

Type: **not specified**

Buoyancy Driven Flow in an Underground Metro Station

Thursday 2 February 2017 18:00 (30 minutes)

Investigation on the baseline flow field in an underground metro station utilising simulation software ANSYS CFX and FDS.

Presenter: DIETRICH, Matthes

Session Classification: Presentations of the first day

Contribution ID: 9

Type: **not specified**

Fire Inside an Underground Station - Experimental and Numerical Investigations

Friday 3 February 2017 09:00 (30 minutes)

Presenter: AMECKE-MÖNNINGHOFF, Stephan

Session Classification: Presentation of the second day

Contribution ID: 10

Type: **not specified**

The Structural Behaviour of Fibre Reinforced Polymer (FRP) for Reinforced Concrete (RC) Structures in Fire

Friday 3 February 2017 08:30 (30 minutes)

Ambient and fire tests on RC slabs with Glass-FRP bars and conceptual approach to fire safety checks for bending moment resistance of FRP-RC members.

Presenter: BILOTTA, Antonio

Session Classification: Presentation of the second day

Contribution ID: 11

Type: **not specified**

Fire Dynamics in Tunnels: Temperature Distribution and Structural Behaviour

Friday 3 February 2017 09:45 (30 minutes)

Study of the temperature distribution in space and time beneath a tunnel ceiling subject to a transient fire. Including a description of the structural behaviour of tunnels under fire and the possible failure modes that could be used to estimate the probability of failure of the tunnel.

Presenter: ROSIGNUOLO, Francesco

Session Classification: Presentation of the second day

Contribution ID: 12

Type: **not specified**

Numerical Simulation of Fire in Tunnel: from Fire Scenario to Structural Response

Friday 3 February 2017 10:15 (30 minutes)

Structural analysis of concrete at high temperature and fire-structure interaction.

Presenter: PACHERA, Matteo

Session Classification: Presentation of the second day

Contribution ID: 13

Type: **not specified**

The Structural Behaviour of Tunnels in Fire

Friday 3 February 2017 10:45 (30 minutes)

The thermo-mechanical computer modelling for the fire safety of concrete tunnels.

Presenter: SOUZA, Roberto

Session Classification: Presentation of the second day

Contribution ID: 14

Type: **not specified**

Meta Model for Complex Fire and Evacuation Models

Friday 3 February 2017 11:15 (30 minutes)

Presentation of a meta (or surrogate) model that interpolates the fatalities, determined in few discrete scenarios by complex fire and evacuation models, to any arbitrary scenario. An advanced Latin-Hypercube design is utilised and its model uncertainty will be described.

Presenter: BERCHTOLD, Florian

Session Classification: Presentation of the second day

Contribution ID: 15

Type: **not specified**

Organisational aspects

Thursday 2 February 2017 10:00 (15 minutes)

Presenter: HEHNEN, Tristan (Bergische Universitaet Wuppertal (DE))

Session Classification: Introduction