

Summer School on Fire Dynamics Modelling 2017



In the beginning of August 2017, JSC's "Civil Safety and Traffic" division organised a one-week summer school about fire dynamics modelling. Over the last decades, fire modelling became very popular in fire safety engineering and science. As the models evolve, they become more complex, making it harder to understand the underlying principles as well as their application limits. This summer school was intended to educate students and researchers on the fundamental theory and algorithms of fire modelling. The theoretical part was accompanied by practical exercises – mostly with the popular Fire Dynamics Simulator (FDS) – with focus on the discussed models. Besides the presentation

of models, scientific pre- and post-processing, as well as validation methods, were part of the agenda.

This school not only targeted learning more about the underlying numerical models in common fire simulation software, but also enabled participants to get in touch with model developers one-on-one. Since special emphasis was put on scientific work, the participants were mainly PhD students and PostDocs.

The topics covered included an introduction to computational fluid dynamics, turbulence, combustion, thermal radiation, and pyrolysis



Summer school participants, lecturers and local organisation team.

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Simo Hostikka (Aalto University) teaching the transport of thermal radiation in fires.

modelling. A short introduction to Python allowed the students to learn how to post-process simulation data. The sections were presented by seven lecturers: Simo Hostikka (Aalto University), Bjarne Husted (Lund University), Susanne Kilian (hhp Berlin), Randall McDermott (NIST), Kevin McGrattan (NIST), and Lukas Arnold (JSC).

The 30 participants came mainly from Europe (8 from Germany, 4 from United Kingdom and Poland, 3 from Finland, Italy and Czech Republic, as well as participants from Denmark, Sweden, Hungary, Slovenia and Australia).

The evaluation of the school showed that the participants were satisfied with the organisation and contents. Based on that outcome, the lecturers decided to repeat this event in 2019.



Simulation of a pool fire.

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