

Topic

Extinction modeling with CFD for selected benchmark case of MaCFP workshop.

Background

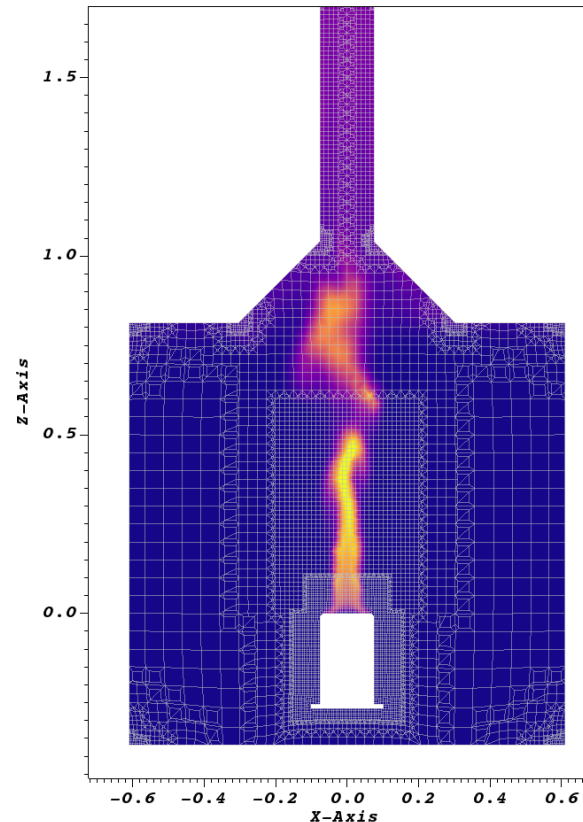
The simulation of fire phenomena is progressing a lot. E.g. calculations of smoke distribution are wide spread in industry. However, the important topics of fire spread and flame extinction are still very challenging.

Extinction depends on multiple factors which evolve over time and directly affects flame and fire spread; the main factors for extinction are the environmental oxygen concentration, temperature or flame residence time.

The thesis is aimed to support the preparation of applications for further funding in fundamental extinction modeling. The candidate will follow current research and should join the upcoming IAFSS MaCFP online workshop to get further insights. The FM Global experimental data of this workshop will be the base for this thesis.

Tools

- OpenFOAM (FDS)
- VisIt, Python



Main Steps

Steps:

1. Literature Study and Review
 - Impact of reduced oxygen environment on combustion
 - Modeling approaches for extinction
2. Taking part in IAFSS online extinction workshop
3. Run initial setup
4. Setup Python and VisIt post-processing
5. Improve setup and evaluate results
6. Publication

Requirements

- High motivation
- Interest in CFD and combustion in a scientific context