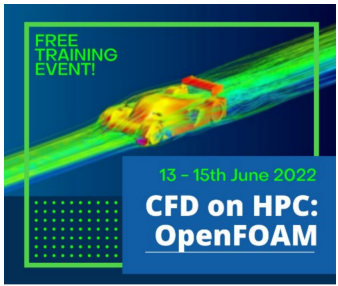
Literature and Tools



EuroCC workshop

Aleksander GRM

13-15, June 2022

Literature

Literature

There are two main web pages with links to literature:

- openfoam.org (on PC workstations)
- cfd.direct (on HPC systems)

User guides:

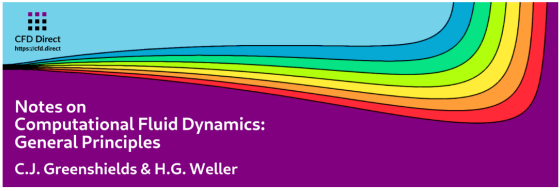
- User Guide #1
- User Guide #2
- Programming Guide – Learn c++ code!

My GitHub repository:

- OpenFOAM_School@github

Link to my GoogleDrive location with books for OpenFOAM

link to the book



About the Book

Notes on Computational Fluid Dynamics (CFD) was written for people who use CFD in their work, research or study, providing essential *knowledge* to perform CFD analysis with confidence. It offers a modern perspective on CFD with the finite volume method, as implemented in OpenFOAM and other popular general-purpose CFD software. Fluid dynamics, turbulence modelling and boundary conditions are presented alongside the numerical methods and algorithms in a series of short, digestible topics, or *notes*, that contain complete, concise and relevant information. The book benefits from the experience of the authors: Henry Weller, core developer of OpenFOAM since writing its first lines in 1989; and, Chris Greenshields, who has delivered over 650 days of CFD training with OpenFOAM.

Contents
Preface
Symbols
1 Introduction
2 Fluid Dynamics
3 Numerical Method
4 Boundary Conditions
5 Algorithms and Solvers
6 Introduction to Turbulence
7 Reynolds-Averaged Turbulence Modelling
8 Sample Problems
Index

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link to the book

Tools

Set up Python environment with GMSH

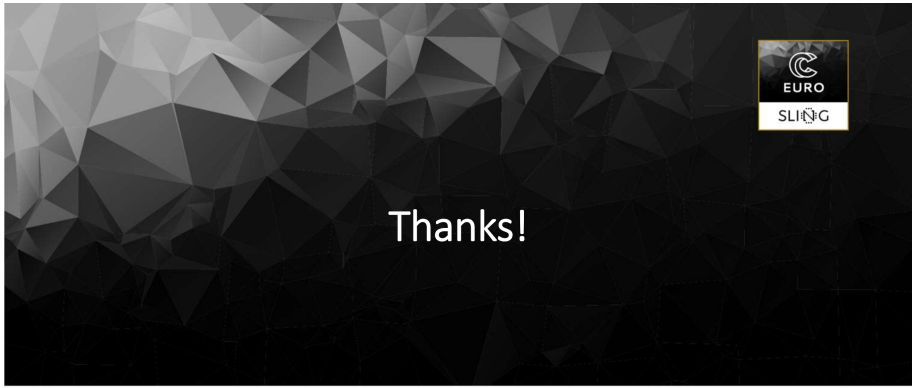
To be able to run advanced GMSH examples we need to set up Python environment

```
1. load module python:
  $> ml av python (check target version)
  $> ml python-version

2. Create new env:
  $> python3 -m venv local

3. Activate new env:
  $> source local/bin/activate

4. Install new packages (active env local):
  $(local)> pip install numpy scipy sympy matplotlib
  $(local)> pip install --upgrade gmsh
```

Load **only** Python environment

To use Python environment we need only to load it

```
1. load module python:
  $> ml av python (check target version)
  $> ml python-version

2. Activate new env:
  $> source local/bin/activate
```



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