



ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

Open Source Codes for the Solution of Differential Equations in Engineering Applications

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Doctorate DIMSAI - AA 2023-2024

Summary

This series of seminars offered to all PhD students enrolled at the University of Bologna covers some aspects of the solution of differential equations by the finite volume method in open environments such as OpenFOAM. The main applications are in the field of heat transfer and fluid dynamics, and other interdisciplinary fields.

The course is organised in four seminars, described in brief in the following page, each consisting of a first part of frontal teaching and one of testing, Q&A, and discussions of specific scientific computing problems.



Contents of the lessons

- Introduction to the finite volume approach for the solution of differential equations
- The Open Source world for the solution of differential equations – Introduction to OpenFOAM
- Construction of computational domain and computational grid – Convergency check and validation
- Numerical solution by means of OpenFOAM – Application to simple examples



Time table

Date	Room	Title of the seminar
11/04/2024 15-18	2.6 and online	Introduction to the finite volume approach
18/04/2024 15-18	2.6 and online	The Open Source world for the solution of differential equations
02/05/2024 11-14	5.1 and online	Construction of computational domain and computational grid
09/05/2024 11-14	5.1 and online	Numerical solution by means of OpenFOAM





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Thank you!

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