

Amaury Bilocq

PhD Candidate — Aerospace & Industrial Engineer — Numerical Methods & Compressible Turbulence
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Professional Summary

Aerospace engineer with expertise in compressible aerodynamics, turbulence modeling, and numerical methods. Experienced in both low- and high-fidelity CFD, turbomachinery, and multidisciplinary collaboration. Passionate about automation, coding, and solving complex problem.

Education

PhD in Aerospace Engineering
M.Sc. Aerospace Engineering
M.Sc. Industrial Engineering

University of Liège, Ongoing since 2020
University of Liège, 2020 (Distinction)
Henallux-Pierrard, 2018 (Great Distinction)

Experience

PhD Candidate, Design of turbomachines

University of Liège, 2020–Present

Thesis supervisors: Prof. Koen Hillewaert & Prof. Vincent Terrapon

Numerical research on high-speed turbulent flows and shock capturing methods for aerospace applications.

- Developed from scratch a massively parallel high-order discontinuous Galerkin solver (C++/Python).
- Investigated shock-capturing strategies for accurately resolving compressible turbulence in high-speed flows.
- Implemented advanced co-processing tools for statistical analysis of large simulation data.
- Contributed to DevOps workflows with GitLab CI/CD and Docker for solver management and testing.
- Supervised master's thesis students in the field of numerical methods.

Teaching Assistant (CFD & Flow in turbomachines)

University of Liège, 2021–2023

- Computational Fluid Dynamics: Prepared, supervised, and corrected exams; developed and delivered practical sessions on numerical methods and turbulence modeling.
- Flow in Turbomachines: Provided simulation data for student projects, focusing on secondary flows around 3D rotor and stator blades in design and off-design conditions. Conducted tutorial sessions on ParaView for post-processing and flow visualization.

Internship, Aircraft Design

University of Liège, Feb–Aug 2020

- Developed a low-fidelity model for preliminary aircraft design.
- Integrated a viscous-inviscid interaction model into an existing full potential solver to enhance aerodynamic performance predictions.

Internship, Satellite Avionics Production

LuxSpace, Feb–June 2018

- Designed a production cell for microsatellite avionics using Lean 3P methodology.
- Integrated Industry 4.0 principles into early-stage design workflows.

Internship, Mechanical Design

Jindal Films, Sep–Nov 2015

- Translated 2D mechanical drawings of a cutting blade station for plastic film production into functional 3D CAD assemblies using Inventor (AutoCAD).
- Collaborated with the machine shop to produce and install the station.

Technical Skills

Programming: Python, C/C++, MATLAB/Simulink, Git
CFD Tools: OpenFOAM, SU2, GMSH, ParaView
CAD/CAE: Siemens NX, AutoCAD, Fusion 360
Automation: TIA Portal (PLC)
Operating Systems: Linux, Windows, macOS

Languages

French (Native)
English (Full Professional)
German (Beginner)