

# Hugo BOULENC

## Curriculum Vitae

✉ (+33) 6 50 54 34 30  
✉ hugo.boulenc@etik.com  
GitHub Page LinkedIn

### Education

- 2022 – present **PhD student in Applied Mathematics, INSA Toulouse / Institut de Mathématiques de Toulouse**, Toulouse, France  
PhD student in Applied Mathematics on Physics-Informed Machine Learning methods applied to hydraulics and hydrology models for floods simulation. Supervised by J. Monnier (INSA Toulouse/IMT), P.-A. Garambois (INRAE Aix-en-Provence) and R. Bouclier (INSA Toulouse/ICA/IUF) at INSA Toulouse.
- 2019 – 2020 **Specialization Degree in Mechanics, Aeronautics and Aerospace Engineering, Centrale-Supélec**, Gif-sur-Yvette, France  
Final year of the “Ingénieur Centralien” curriculum, advanced courses in Fluid Dynamics.
- 2015 – 2020 **Msc in General Engineering, major in Aeronautics and Aerospace, EPF École d'Ingénieur-e-s**, Montpellier & Sceaux, France  
Exchange Semester with Polytechnique Montréal in Fluid Dynamics & Heat Transfer Science.

### Professional Experience

- 2026 – present **Freelance in Machine Learning & Data Science for Physics, Freelance**, Montpellier, France  
I help companies and research teams leverage complex data from physical phenomena, build fast surrogate models to accelerate simulations, and combine data with physical models to improve predictions.
- 2020 – 2021 **Consulting Aerospace Engineer, CNES / ALCADIA**, Paris & Toulouse, France  
Modelization of Cryogenics Systems for the reusable launcher demonstrator Themis.
- 2020 **Internship in Fluid Dynamics and Machine Learning, ArianeGroup**, Les Mureaux, France  
Development of a surrogate model based on CFD calculations and Machine Learning for Ariane 6.

### Teaching Experience

- 2022 – 2024 **Teaching Assistant, INSA Toulouse**, Toulouse, France  
Tutorial and Practical Sessions in Data Assimilation, PDE and Fourier Analysis for 2<sup>nd</sup> to 5<sup>th</sup> year students.

### Publications

- 2025 **H. Boulenc, R. Bouclier, P.-A. Garambois and J. Monnier (2025). Spatially-distributed parameter identification by physics-informed neural networks illustrated on the 2D shallow-water equations. *Inverse Problems*.**

### Conferences & Workshops

- 2025 **DTE & AICOMAS**, Paris, France  
Inverse Problems for Shallow-Water Equations solved by Physics-Informed Machine Learning methods, Mini-Symposium presentation.
- 2024 **ECCOMAS**, Lisboa, Portugal  
Physics-Informed Machine Learning for Parameter Identification on Shallow-Water Equations, Mini-Symposium presentation.
- 2024 **ANITI Days**, Toulouse, France  
Poster co-presentation with Mustapha Allabou.
- 2024, 2025 **ANITI Chair PILearnWater Plenary Session**, Toulouse, France
- 2022 – 2024 **ANR MUFFINS Plenary Sessions**, Aix-en-Provence & Toulouse, France