

# Esteban Foucher

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Engineer, physicist – École Normale Supérieure Ulm (class of 2020)

Engineer and physicist trained at École Normale Supérieure Ulm, I work at the intersection of simulation, data, and applied physics. I am currently a thermo-hydraulic simulation engineer at Jimmy Energy, where I contribute to nuclear reactor conception. In parallel, I develop an embedded computer-vision system for aerodynamic measurements.

## Professional Experience

### 2025 — Thermo-hydraulic Simulation Engineer, Jimmy Energy

Currently:

- Thermo-hydraulic simulations (computational fluid dynamics)

Internship:

- Support for reactor design engineering and safety
- Exploratory simulations of chemical kinetics under irradiation

My experience at Jimmy includes an initial internship in 2023–2024, followed by joining the simulations team again in 2025.

### 2024 — Data & Performance Engineer, Orient Express Racing Team

- Data engineering & analysis for performance of the AC40 and AC75 racing yachts
- Data science: development of a post-processing wind-reconstruction tool and an optimizer for calibration
- Collaboration with the mechatronics team for debugging and performance follow-up

My time at OERT covers in particular the phase of commissioning of the AC75 and participation in the 37th America's Cup.

### 2023 — M2 Research Internship, Nano-optics

Laboratory of Physics, École Normale Supérieure – Nano-optics group

**Topic:** Ultra-broadband photodetection of the two-dimensional semi-metal *PtSe<sub>2</sub>*.

- Conception of the ultrabroadband microphotodetection experiment
- Fabrication of PtSe<sub>2</sub> field-effect transistors

### 2022 — M1 Research Internship, Condensed Matter

Theory & Simulation of Condensed Matter Group – King's College London

**Topic :** Fully bold formalism at strong coupling regime for the (0 + 0)-dimensional Hubbard model (Theoretical study of a strongly interacting electron system)

## 2021 — L3 Research Internship, Nanofluidics

Laboratory of Physics, ENS – Nanofluidics group

**Topic:** Measurement of fluid flows at the nanoscale using confocal fluorescence microscopy.

## Education

### 2020–2024 — École Normale Supérieure, Paris

Master ICFP: Fundamental Physics (quantum physics major)

Bachelor's degree: Fundamental Physics

*Main subjects:*

- **Physics:** quantum physics, statistical physics, solid-state physics, special relativity, quantum field theory, general relativity, fluid mechanics
- **Computer science / numerical methods:** numerical methods for partial differential equations, machine learning
- **Mathematics:** statistics, probability, optimization, algebra, analysis

## Projects

### SailCV – Embedded computer-vision for aerodynamic measurements

Motivated by my experience in the sailing world, I am developing in my spare time an embedded computer-vision project dedicated to aerodynamic measurements.

*SailCV-tell-tale-tracker*

Design of a tell-tale tracker to monitor boundary-layer separation. Creation of a dataset and fine-tuning of a detector.

*SailCV-3D-reconstruction*

This project aims to accurately reconstruct metric point clouds from calibrated stereo views. It is based on:

- the ability of recent AI models dedicated to 3D reconstruction to predict dense point correspondences between two views of the same object;
- precise calibration of the intrinsic and extrinsic parameters of a dual-camera system, enabling accurate triangulation.

### Normale Physics Review

Contribution to the creation and writing of the student physics journal Normale Physics Review.