

THÉO VIDAL

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EDUCATION

Master of Science in Engineering – ENSTA Paris, Institut Polytechnique de Paris 2024–2027

- Oldest French Eng. school, Ranked 2nd best M.Sc. in Engineering since 2024 (*L'Étudiant*)
- **Relevant Coursework:** Dynamical Systems (waves, stability, bifurcation, chaos), Finite Element Method (FEM), Compressible Fluid Mechanics, Turbulence, Fluid-Structure interactions, Climate Physics, Computational Fluid Dynamics (CFD), Lattice-Boltzmann method (LBM)
- **GPA: 4.26**
- Additional Coursework: Public Speaking

Bachelor of Science in Engineering – ENSTA Paris, Institut Polytechnique de Paris 2023–2024

- **Relevant Coursework:** Incompressible Fluid Mechanics, Experimental Methods for Mechanics, Statistical Mechanics, Quantum Mechanics, MATLAB programming, General Relativity, Ordinary and Partial Differential Equation (ODE, PDE), Optimization
- **GPA: 4.29**, top 5% of the class out of 216 students
- Additional Coursework: Philosophy, Competitive Debating

Maths, Physics and CS class to prepare competitive exams – Lycée du Parc, Lyon 2021–2023

- “*Classe préparatoire*”: intensive preparation for nationwide competitive entrance exams for the French Ivy League “*Grandes Écoles*”; ranked 2nd best class (*L'Étudiant*)
- **Relevant Coursework:** Pure Mathematics, C and OCaml programming, Theoretical Computer Science, General mechanics, Electronics
- **Completed with Honours**
- **Ranked 17/679** to the 2nd most selective nationwide competitive exam “*Mines-Ponts*”

High-School Diploma – Mathematics, Physics, Engineering – Lycée Carriat, Bourg-en-Bresse 2021

- **Completed with Highest Honours**, ranked top of the class of 202 students
- Extracurricular activities: Class representative, Student representative on the disciplinary council

RESEARCH EXPERIENCE

Research Internship

MARCH–JULY 2026

ONERA, The French Aerospace Lab, Meudon, France

Advisor: Paul Beaumard

- Evaluated a novel Reynolds-stress closure formulation for RANS modeling based on the Generalized Kolmogorov Equation to improve anisotropic turbulence predictions
- Engineered a highly parallelized Python framework for high-performance computing (HPC) environments to process and extract scale-by-scale energy terms from benchmark DNS channel flow datasets
- Analyzed the statistical interplay between two-point correlations and averages to refine predictive accuracy in structural turbulence models

Research Internship

SEP. 2025–FEB. 2026

Laboratory of Mechanics Paris-Saclay (LMPS), University of Paris-Saclay, France

Advisor: Professor Ludovic Chamoin

- Working on the [DREAM-ON project](#), funded by the European Research Council (ERC), for real-time structural health monitoring
- Implementing a feedback loop with a Kalman filter that integrates *in-situ* measurement data into a finite-element digital twin, to predict damage on a wind turbine blade
- Using a Physics-Augmented Neural Network to model the material constitutive law (hyperelasticity, plasticity, viscoelasticity)

Research Internship

MAY–AUG. 2025

Laboratory of Fluid Dynamics (LFD), University of Buenos Aires, Argentina

Advisor: Professor Guillermo Osvaldo Artana

- Conducting exploratory work on capillary networks filling under uniform heating and temperature gradients
- Conducting 70 experiments with Arduino control and crafted microchannels to numerically acquire and analyse flow data
- Seeking a theoretical model to account for the resulting effects (viscosity, Marangoni flow, Laplace pressure) and extending a MATLAB simulation program to integrate them
- [Writing a final 20-page report](#) to interpret data and pave the way for future investigations in the laboratory

Participation in the International Physicists' Tournament (IPT)

SEP. 2024–FEB. 2025

Advisors: Professor Romain Monchaux, Professor Jérôme Perez

- Representing ENSTA in a tournament about student research work: mini seminar on one's results, followed by a debate with another student
- [Ranked 4th out of 11 in teams, 8th out of 55 individually](#)
- Conducting experiments on the oscillations of honey to characterize the influence of temperature and flow rate on the dynamics
- [Currently writing a paper](#) on my findings

TEACHING EXPERIENCE

One-to-one Teacher

SEP. 2025–JUNE 2026

- Teaching English to a middle school student and mathematics to a bachelor's student

Organizer and Teacher – Machine Learning class by ENSTA student club

OCT.–DEC. 2024

- Organizing six lectures and practical exercises for ENSTA students on behalf of the IT club
- Managing two other students giving parts of the courses, organized the communication around the event

Volunteer at the Climate Fresk

SEP. 2024–MAY 2025

- Organizing 3-hour workshops to raise awareness on climate change and its effects, based on IPCC reports

Volunteering – Online tutor for scientific high school students

FEB.–JUNE 2024

- Coaching high school students on a weekly basis in their final year
- Promoted understanding of mathematics and physics by illustrating undergraduate notions and supporting students' academic orientation

- Experience sharing and advice on how to approach their final exams

WORK EXPERIENCE

Head of Business Development - ENSTA Paris Junior-Enterprise NOV. 2023–APR. 2025

- Engineering consultancy association run by 18 students – €147,395 / S\$221,248 of sales
- Establishing the commercial action plan, participating in building a 3-year global strategy, in the context of a merger with ENSTA Bretagne's Junior-Enterprise
- Managing a team of 8 people and projects: implementing a bi-monthly newsletter, developing an automated email prospecting tool, interviewing a former client, participating in the competition for the Best Commercial Strategy Award
- Prospecting 50+ clients by phone and at exhibitions, drafting 10 contracts with precise specifications, monitoring 2 projects with regular appointments between the client and the students

Internship – Logistics Agent, French national railway company SNCF JUL.–AUG. 2024

- Receiving and delivering parts to technicians that maintain French high-speed trains “TGV”

Volunteering – Responsible for a fundraising initiative to fight rare diseases DEC. 2023

- Selling homemade goods at ENSTA
- €4,600 / S\$6,904 raised in one week (+24% on the 2022 edition), donated for research for rare, progressive and severely disabling genetic diseases (“AFM-Telethon” charity)
- Supervising a team of 10 people, planning tasks, running the stand

Summer job – Barista in a motorway service station AUG. 2021, 2022, AND 2023

- Coffee brewing, order preparation and payment, customer service, troubleshooting, cleaning

AWARDS AND CERTIFICATIONS

TOEFL iBT –114/120 (CEFR C2) OCT. 2025

Reading: 29/30 – Listening: 30/30 – Speaking: 30/30 – Writing: 25/30

ENSTA Public speaking contest – First place NOV. 2024

Cambridge Certificate – C1 Advanced OCT. 2021

PROJECTS

Hackathons on Data Science and Machine Learning in Python NOV. 2024–PRESENT

- [MIT Global AI Hackathon](#), Solo, May 2025: developing a prototype for a Large Language Model (LLM) agent to generate 3D models based on user prompts
- [Hi!ckathon](#), Team of 6, Nov. 2024: developing an XGBoost regression model to predict groundwater levels in France during summer

Study of an airfoil: aerodynamics and modelling using Machine Learning MAR.–JUNE 2025

- Programming a Physics-Informed Neural Network (PINN) for surrogate modelling with PyTorch to calculate air flow around a wing profile
- Conducting wind tunnel experiments on 3D printed wing profiles to characterize their performances: lift, drag, eigenfrequencies

Drone trajectories for post-earthquake reconnaissance

MAR. 2022–JULY 2023

- Drawing trajectories for drones to explore an area affected by an earthquake, depending on the topography and population density
- Implementing a pipeline to subdivide a city with algorithms such as clustering, k-nearest neighbours and k-means
- Finding the optimal path using a simulated annealing algorithm to solve a Traveling Salesman Problem

High-school diploma project: Remote 3D cartography platform

MAR.–JUNE 2021

- 3D-printing a platform to rotate a LiDAR sensor on two axes, controlled by an Arduino board, to scan a room
- Developing desktop software using JavaScript and Electron to render the scanned 3D model, transferred from the platform via radio communication

Open-Source projects in Web development and Go programming

2016–PRESENT

- Self-taught programming since I'm twelve; open-source projects [available on GitHub](#)
- Most advanced website: [Highest](#), climbing routes tracker to note individual progression and objectives

SKILLS

Programming: Go, C, C++, Arduino, OCaml, MATLAB, JavaScript, Python, TensorFlow, PyTorch

Software: Fusion360, 3DEXperience, Git

Languages: French (native), English (fluent; CEFR level C2), Spanish (intermediate)

Sports: Climbing (6B, participation in competitions), swimming

REFERENCES

Paul Beaumard – Research Engineer

- ONERA, The French Aerospace Lab – Meudon, France
- Research Internship supervisor (March-July 2026)
- paul.beaumard@onera.fr

Professor Ludovic Chamoin – Full Professor and Researcher in solid mechanics

- Head of the STAN research team at the Laboratory of Mechanics Paris-Saclay (LMPS) – École Normale Supérieure Paris-Saclay, University of Paris-Saclay, France
- Research Internship supervisor (September 2025 – February 2026)
- [Homepage](#) – ludovic.chamoin@ens-paris-saclay.fr – +33 (0)1 81 87 51 59

Professor Guillermo Osvaldo Artana – Full Professor and Researcher in microfluidics

- Head of the Laboratory of Fluid Dynamics (LFD) – University of Buenos Aires, Argentina
- Research Internship supervisor (May – August 2025)
- [Homepage](#) – gartana@fi.uba.ar – +54 11 4343-0968

Professor Romain Monchaux – Full Professor and Researcher in fluid mechanics

- Laboratory of Mechanics and Interfaces (LMI) – ENSTA, France

- Teacher of the “Turbulence” class, Supervisor for the International Physicists’ Tournament (IPT) (September 2024 – February 2025), Supervisor for the *Alerolab* project, Coordinator for the Research Internship in FIUBA, Argentina and at ONERA, France
- [Homepage](#) – romain.monchaux@ensta.fr – +33 (0)1 69 31 97 66

Professor Jérôme Perez – Full Professor and Researcher in theoretical astrophysics

- Applied Mathematics Unit (UMA) – ENSTA, France
- Teacher of the “Fundamental concept of physics” class, Supervisor for the International Physicists’ Tournament (IPT) (September 2024 – February 2025)
- [Homepage](#) – jerome.perez@ensta-paris.fr – +33 (0)1 81 87 21 14