Hugo Alexandre, PhD Student

✉ hugoalexandre127@gmail.com 🔗 My Linkedin

📞 +33 7 80 06 32 43 🐙 @HugoGW

Photo taken in the west arm of Virgo

Education

2025 – present
- **PhD Thesis in Gravitational-Wave Astrophysics,** *Université de Caen Normandie (Uni-Caen) and LPC.* Characterization of the coronagraphic method for the rapid localization of supermassive black holes for the LISA mission

2024 – 2025
- **International Master's Degree in Computational Physics,** *Université Marie-Louis Pasteur (UMLP).* Specialization in Machine Learning and Numerical Simulations.

2021 – 2023
- **Master's Degree in Subatomic Physics & Cosmology,** *Université Grenoble Alpes (UGA).* Specialization in Cosmology, Astroparticles and Gravitational Waves.

- **Magister's Degree in Fundamental Physics,** *Université Grenoble Alpes (UGA).* Specialization in Research and Mathematics of General Relativity.

2018 – 2021
- **Bachelor's Degree in Physics,** *Université Grenoble Alpes (UGA).*

2018 – 2019
- **Research Passport University Diploma,** *Université Grenoble Alpes (UGA).*

Employment History

2025 – now
- **YouTube Video Scriptwriter (Freelance).**
Scientific consultant for Zebroloss (ESA partner). Self-employed (autoentrepreneur) as a scriptwriter and scientific lead. I write video and documentary scripts on astrophysics, cosmology, and quantum mechanics. I am responsible for the scientific accuracy, numerical calculations, and the design of simulations used in Zebroloss projects.

2023 – 2024
- **Physics-Chemistry Teacher.** Middle School (full-time position).
I worked as a full-time physics-chemistry teacher at a middle school, applying core scientific concepts to teach students effectively and manage classroom dynamics.

Additional Experiences

06/2025
- **Participant at the 4th MaNiTou Summer School on Gravitational Waves,** Marseille, Luminy Campus, Aix-Marseille Université.
Comprehensive training in gravitational wave science: theory, instrumentation, data analysis, and applications to astrophysics and cosmology.
Attended lectures and hands-on sessions by leading researchers on topics including LVK, LISA, PTA, source modeling, stochastic background, AI methods, and multi-messenger astronomy. The school gathered M.Sc, PhD students, and researchers in the Calanques National Park.

Additional Experiences (continued)

02/2025 – present
- **M2 Internship at OCA/ARTEMIS (Nice),**
  Inferring a Model of the Galaxy with Compact Binaries Observed by LISA.
  Supervised by Dr. Natalia KORSAKOVA.
  Contributing to the development of methods for inferring a model of the galaxy based on gravitational wave observations of galactic binaries by LISA with machine learning.

09/2024
- **Visit to Virgo Gravitational Wave Interferometer,**
  Visited the Virgo interferometer for a documentary filming, guided by physicist Jérôme Degallaix. Participated in technical discussions on the detector's design and performance.

02/2023 – 07/2023
- **M2 Internship at LAPP (Annecy),**
  Influence of Cosmology on the Gravitational Wave Background of Compact Binaries.
  Supervised by Pr. Tania REGIMBAU.
  Studied the impact of cosmological parameters and models (e.g., H_0, Ω_M, dark energy, quintessence...) on the SGWB in ΛCDM and alternative models.

06/2022 – 08/2022
- **M1 Internship at APC Laboratory (Paris).**
  The Cosmic-Ray Boron-over-Carbon Ratio Observed by Voyager 1.
  Supervised by Pr. Stefano GABICI.
  Analyzed cosmic-ray spallation in the ISM and calculated the B/C ratio using analytical and numerical tools.

02/2022
- **Participant, 9th French Physicists' Tournament (ENSTA, Paris).**
  Presented a physics research problem in English to a jury and competing teams as part of a collaborative and competitive scientific event.

01/2022 – now
- **Founder of 1minute2physique (TikTok).**
  Produce short videos with numerical simulations, mathematical insights, and popular physics content to communicate science effectively.

Skills

Languages

- French – Mother tongue
- English – B2/C1 Level, strong reading, writing and speaking competencies

Coding

Python	Machine Learning (Pytorch, Normalizing Flow), Data Analysis (Bayesian Inference, MCMC), Simulation (FDTD Method, Matplotlib), Coding on Cluster (CCIN2P3)...
LaTeX	Scientific reports and presentation documents, CVs, posters, and complex equations formatting...
Fortran	Basic Skills and Non-Analytical Problem Solving

Misc.

- Teaching, writting skills, theoretical and numerical skills...