

**Personal information:**

- Argentinean and French citizen
- ernehorne@gmail.com
- www.ernestohorne.com
- born: 05.02.1985

Ernesto Horne

IT-Skills

Programming: Proficient in Python, Matlab, Latex, and Version Control Systems.

Numerics and big data: Experienced running and analysing large numerical simulations. Experienced with high-performance computing (Fortran, C++) and parallel computing (MPI).

Data visualization: Matplotlib, Seaborn and large numerical simulations rendering.

Machine learning: Igorithm/classification/clustering methods, regression models. SciKitLearn.

Deep learning and AI: TensorFlow, Keras, Reinforcement learning.

Website design: Developed an educative physics website and a personal professional website.

Work experience

(2017–2020) **École Polytechnique**, LadHyX, Paris, France

Postdoctoral research associate in large scale turbulence and geophysical flows

- Planned, developed, constructed and implemented a novel experimental setup.
- Worked with numerical simulations and performed advanced analytic and data rendering/visualization.
- Conducted fundamental research and modelling in geophysical fluid dynamics.

(2016–2017) **École Centrale**, Lyon, France

Postdoctoral research associate in modelling of environmental flows

- Developed a Python post processing library for analysing large dataset.
- Worked and led multiple-discipline collaborations.

(2007–2009) **Universidad de Buenos Aires**, Geology Department, Argentina

Undergraduate researcher

- Developed stations for measuring and contrasting observational volcanic seismic data with analytical models.

Education

(2021) **Data Science bootcamp**, Datascientest, Paris. Duration: 3 months (400h). Certified by Sorbonne.

(2012–2015) **École Normale Supérieure de Lyon**, Physics Lab, France

Doctor of Philosophy, *Geophysical Fluid Dynamics*

"Transport properties of internal gravity waves", *Thesis graded with honours*.

Main collaborations: Utrecht University. Signal processing team (SISYPH) ENS Lyon.

(2005–2012) **Universidad de Buenos Aires**, Physics Department, Argentina

Masters Thesis, *Numerical modelling in fluids*

"Cancellation exponent in rotating flows", graded 10/10.

Degree studies, Sc. Physics (equivalent to Bachelor and Masters degree)

Majors in fluids dynamics and Earth sciences

Awards and scholarships

(10.2018) **Workshop invitation**, EuroTech Postdoc Workshop, TUE, Eindhoven, Netherlands. *All fees considered.*
(08.2017) **Workshop invitation**, Turbulent Flows in Climate Dynamics, Les Houches, France. *All fees considered.*
(08.2016) **Young Researchers' Financial support**, ICTAM Congress, Montreal, Canada. *Travel support.*
(09.2016) **Financial support**, ISSF Symposium, San Diego, USA. *Lodging support.*
(09.2014) **Financial support**, FDSE Workshop, Cambridge, UK. *Inscription fees support.*
(2007–2009) **Scholarship**, VOLUME project, European Comision. Univ. Buenos Aires, Argentine. *monthly income.*

Languages

Spanish: Mothertongue.

English: Fluent: 5 years residence in California (1989-1994). Working language for 9 years.

French: Fluent: 7 years residence in France (2012-2020).

German: B1, initial courses and multiple travels to Germany. Eager to improve.

Teaching

Lectures: Environmental hydrodynamics (Master 1 course), École Polytechnique, France (2019).

Lectures: Physics high school level. ECOS high school, Buenos Aires, Argentine (2011-2012).

Supervision: M. H. Hamede, Master 2 research internship, École Polytechnique (2019).

Supervision: D. Micard, Master 2 research internship, ENS de Lyon (2014).

Research activities

- Worked within 5 fundamental and applied research groups.
- Published 11 international peer review and conference articles.
- Exposed results at international conferences and at main seminars in renowned universities.
- Selected for participating in 4 international workshops.
- Reviewer of the Journal of Fluid Mechanics (Cambridge Press).

Publications

- E. HORNE et al. 2021. Variational mode decomposition for estimating critical reflected internal wave in stratified fluid. *Exp Fluids* 62, 110.
- E. HORNE et al. 2019. Particle transport induced by internal wave beam streaming in lateral boundary layers. *JFM*. 870, 848-869.
- J. SCHMITT, E. HORNE et al. 2015. An improved variational mode decomposition method for internal waves separation. *Eusipco*.
- E. HORNE AND P. MININNI 2013. Sign cancellation and scaling in the vertical component of velocity and vorticity in rotating turbulence. *Phy Rev E*. 88, 013011.

Selection of conference proceedings

- E. HORNE et al 2019. Upward and downward transfer of energy in rotating stratified flows. *72nd Annual Meeting of the APS Division of Fluid Dynamics*. Seattle, USA.
- E. HORNE et al. 2016. Energetics aspects in Direct Numerical Simulations of a turbulent stratified flow: irreversible mixing. *VIIIth International Symposium on Stratified Flows*. San Diego, USA.

Academic reference

Pablo Mininni, Researcher of CONICET. Professor at Department of Physics, UBA, Argentina. mininni@df.uba.ar

Philippe Odier, Maître de Conference (associate professor), ENS de Lyon, France. philippe.odier@ens-lyon.fr

L. R. M. Maas, Professor at IMAU (Utrecht University) and Guest senior scientist at NIOZ, Netherlands. L.R.M.Maas@uu.nl

Miscellaneous

Field campaigns: Andes, Antarctica and Atlantic ocean.

Sports: Biking, climbing, hiking, football, swimming, skiing, underwater hockey.

Sailing • Cinema • Photography • Geopolitics • Woodworking.