

# Gabriel Rabanal Bolaños

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 [gabrielrabanal.github.io](https://github.com/gabrielrabanal) ♦  [gabrielrabanal](https://github.com/gabrielrabanal) ♦  ♦ 

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## EDUCATION

### Harvard University

*Ph.D. in Physics*

Cambridge, MA

Nov 2023

### National University of Engineering

*Bachelor of Science in Physics, GPA: 4.00*

Lima, Peru

Jan 2016

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## SKILLS

**Programming Languages:** Proficient in Python, C/C++; familiar with SQL, HTML, Julia, Wolfram

**Data Analysis Tools:** Tensorflow, Keras, XGBoost, Pandas, NumPy, SciPy, Seaborn, Scikit-learn, Jupyter

**Development Tools:** Git, Bash, Regex; experienced with IDEs: Jupyter Notebook, VSCode, Emacs, Sublime

**Analytical Techniques:** Machine learning, Monte Carlo simulations, frequentist and Bayesian statistics

**Languages:**

- **Fluent:** Spanish (Native), English
- **Advanced:** French, Akkadian, Sumerian
- **Basic:** Quechua, Mandarin, German

**Language Studies:** Phonetics, grammar, and scripts across diverse language families

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## RESEARCH EXPERIENCE

### Harvard University and CERN

*Doctoral Researcher*

Cambridge, MA, USA / Geneva, Switzerland

Sep 2018 — Nov 2023

- Led the development and refinement of machine learning models (Deep Neural Networks and Boosted Decision Trees) to enhance event classification accuracy by three standard deviations
- Designed and implemented robust data validation and automation processes to optimize large-scale data analysis workflows
- Commissioned a muon spectrometer, significantly improving tracking efficiency and resolution
- Mentored a team of undergraduate researchers and served as a Teaching Assistant for physics courses

### Yale University

*Undergraduate Researcher*

New Haven, CT, USA

Jan — Apr 2016

- Conducted detailed analysis of scintillator cell data and Monte Carlo simulations, contributing to the PROSPECT experiment focused on neutrino anomalies.

### Peruvian Institute of Nuclear Energy

*Undergraduate Researcher*

Lima, Peru

Jan — Apr 2015

- Performed calibration and neutron flux density measurements within a nuclear reactor, supporting radiopharmaceutical production.

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## PUBLICATIONS

- ATLAS Collaboration. *VVV production in proton collisions at  $\sqrt{s} = 13$  TeV* (forthcoming)
- Rabanal Bolaños, G. on behalf of the ATLAS Collaboration. *Cosmic results with the final Micromegas sectors for the ATLAS Muon upgrade*. In *Proceedings of 40th International Conference on High Energy Physics — PoS(ICHEP2020)*, volume 390 (pp. 773-778)
- ATLAS Collaboration. *Evidence for the production of three massive vector bosons with the ATLAS detector*. *Phys. Lett. B* 798 (2019) 134913. [arXiv:1903.10415 \[hep-ex\]](https://arxiv.org/abs/1903.10415)