Gabriel Rabanal Bolaños

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EDUCATION

Harvard University — Cambridge, MA
Ph.D. in Physics — November 2023

National University of Engineering — Lima, Peru
Bachelor of Science in Physics, GPA: 4.00/4.00 — January 2016

SKILLS

- **Programming Languages:** Proficient in Python, C/C++; Familiar with SQL, HTML, Julia, Mathematica
- **Data Analysis Tools:** Tensorflow, Keras, XGBoost, Pandas, NumPy, SciPy, Seaborn, Scikit-learn
- **Development Tools:** Git, Bash, Regex; experienced with IDEs: Jupyter, VSCode, Emacs, Sublime Text
- **Analytical Techniques:** Machine learning, Monte Carlo simulations, frequentist and Bayesian statistics
- **Languages:**
  - **Fluent:** Spanish (Native), English
  - **Advanced:** French, Akkadian, Sumerian
  - **Basic:** Quechua, Mandarin, German
- **Additional Expertise:** Linguistics, grammar, phonetics, and scripts across diverse language families

RESEARCH EXPERIENCE

Harvard University and CERN — Cambridge, MA, USA / Geneva, Switzerland
Doctoral Researcher — September 2018 — November 2023

- Led the development and refinement of machine learning models (DNN, BDT), increasing detection significance by three standard deviations, contributing to measurements in particle physics
- Designed and implemented robust data validation processes, optimizing large-scale data analysis workflows and enhancing accuracy
- Commissioned a muon spectrometer, improving particle tracking efficiency and spatial resolution
- Mentored a team of undergraduate researchers, fostering collaboration and increasing research productivity

Yale University — New Haven, CT, USA
Undergraduate Researcher — January 2016 — April 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 — Lima, Peru
Undergraduate Researcher — January 2015 — April 2015

- Calibrated spectrometers for neutron flux density measurements in a nuclear reactor, supporting radiopharmaceutical production

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]