

Lucas Flores

Geneva, Switzerland

SKILLS

LANGUAGES (Proficient) C/C++, Python, Bash
(Good) HTML, CSS
(Basic) Java, JavaScript, Mathe-
matica

SOFTWARE (Proficient) Linux/Unix, git, CI,
ROOT, \LaTeX
(Good) numpy, scipy, Docker

OTHER Hypothesis testing, statistics,
machine learning, regression
analysis, scraping, Web design,
Arduino microcontrollers

EXPERIENCE

JULY 2015 – PRESENT

University of Pennsylvania
Research Assistant

- Searched for theorized subatomic particles, furthering knowledge of the particle composition of the universe, by investigating petabytes of real and simulated data from proton-proton collisions at the Large Hadron Collider (LHC) with the ATLAS collaboration located in Geneva, Switzerland.
- Developed C++/Python framework with ROOT libraries to clean, analyze, transform, and visualize data, engineering new features and using them to optimize selections.
- Developed framework for preservation and recasting (analysis reinterpretation using other theoretical physics models) of a physics analysis using CI, Docker images and workflows.
- Served as a software expert for the electron-photon performance group. Re-optimizing a multivariate likelihood based electron identification algorithm used in nearly all analyses on ATLAS. Also supported shared software used to process petabytes of upstream datasets (C++ & Python).

AUGUST 2015 – MAY 2016

University of Pennsylvania
Teaching Assistant

- Taught introductory labs in both classical mechanics and electromagnetism.
- Laid out the purpose of each lab, guiding students to complete each lab with a good understanding of the experimental techniques and how the labs connected to their class's lecture component.

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WEBSITE lucasflores.com

EDUCATION

AUG. 2015 – **PhD**

PRESENT High Energy Particle Physics
The University of Pennsylvania,
PA

AUG. 2015 – **MSc**

JUNE 2017 High Energy Particle Physics
The University of Pennsylvania,
PA

SEPT. 2010 – **BS**

JUNE 2015 Physics & Applied Mathematics
The University of California,
Riverside, CA

PAPERS, TALKS & POSTERS

2020 **Paper**

Search for trilepton resonances from chargino and neutralino pair production in $\sqrt{s} = 13$ TeV pp collisions with the ATLAS detector

2019 **Paper published in The Journal of Instrumentation**

Electron reconstruction and identification in the ATLAS experiment using the 2015 and 2016 LHC proton-proton collision data at $\sqrt{s} = 13$ TeV

2019 **Talk and poster at the APS Division of Particles and Fields Meeting**

A Search For 3-lepton Resonances In A Minimal SUSY B-L R-parity Violating Model

PROJECTS

2018 **PennApps XVII Hackathon**

keypacitence, Adds capacitance touch layer to your keyboard.

2017 **PennApps XV Hackathon**

cryptoino, Lightweight symmetric key exchange via neural nets, targeting small insecure Internet of Things devices.

2016 **PennApps XIV Hackathon**

eyeHUD, smart eye-tracking transparent window display. 3rd place overall.