

GUILLERMO NICOLAS HAMITY

RESEARCHER IN HIGH ENERGY PARTICLE PHYSICS

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ABOUT

Postdoctoral Research Associate in Experimental High Energy Particle Physics at the University of Edinburgh. Research focused on new physics at the Large Hadron Collider, searching for long-lived exotic particles, performing precision measurements and reinterpretations. Passionate about applied data analysis with experience in a variety of techniques, including data preparation, distributed computing, machine learning, model fittings and hypothesis testing. I have been involved in several publications and am experience in collaborative research.

WORK EXPERIENCE

Lecturing

The University of Edinburgh

September 2021 – July 2019

Machine Learning Lectures

Lecture Honours level Machine Learning module. Course covers topics from linear regression and decision trees, to adversarial neural networks. Deliver practical computing labs and an end year project on machine learning conducted in Python. Additionally, provide supervision for an Honours student project on particle identification.

Highlights

- Preparing lectures and practical labs
- Deliver lectures and workshops on machine learning with an emphasis on applicability in the field of particle physics
- Designed a machine learning project using novel liquid-Argon detector imaging dataset
- Supervised honours student on particle identification project using boosted decision trees
- Oversee teaching assitant supervision and marking

Postdoc Research

The University of Edinburgh

August 2019 – Present

Postdoctoral Research Associate

Leading researcher in analysis group within ATLAS Experiment, searching for long-lived particles decaying to tau-leptons. Active in precision analysis with interpretation in exotic physics with focus on data-driven background estimation.

Highlights

- Delivering on Run-3 publications, including trigger and offline performance. Contributing to publication of precision measurements and exotic searches. Reviewing publications of two analysis.
- Development of tracking and tau-lepton identification both in the ATLAS reconstruction and trigger for displaced taus.
- Delivery of a trigger algorithm using recurrent neural-network for LHC Run3.
- Supervise PhD students on analysis and qualification tasks within experiment.
- Convene the tau reconstruction and identification subgroup meetings. Maintain common c++/python analysis tools used in the collaboration.

PhD research

The University of Sheffield

August 2015 – Present

PhD candidate

PhD student researching Exotic Higgs physics with major contribuitions to three leading publication

Highlights

- Performed statistical analysis of exotic Higgs and charged Higgs publications. Involved developing code and workfolow for statistical interpretation and interpretation of the analysis results.
- Conducted a reinterpretation of the Higgs precision measurement in the context of the two-Higgs-Doublet and Minimal Supersymmetric Standard Model.
- Worked within common performance groups to deliver on early Run-2 performance results.
- Attended several schools on computing, machine learning, and particle physics. Teaching Assistant for several mathematics, physics and programming courses.

PUBLICATIONS

ATLAS-CONF-2022-0342022

Search for heavy long-lived multi-charged particles in the full Run-II $\sqrt{s} = 13$ TeV collision data at $\sqrt{s} = 13$ TeV using the ATLAS detector

JHEP09(2018)1392018

J. High Energ. Phys. 2018, 139

Search for charged Higgs bosons decaying via $H^\pm \rightarrow \tau^\pm \nu_\tau$ in the τ +jets and τ +lepton final states with 36 fb⁻¹ of pp collision data recorded at $\sqrt{s} = 13$ TeV with the ATLAS experiment

JHEP01(2018)0552018

J. High Energ. Phys. 2018, 55 (2018).

Search for additional heavy neutral Higgs and gauge bosons in the ditau final state produced in 36 fb1 of pp collisions at $\sqrt{s} = 13$ TeV with the ATLAS detector.

ATLAS-CONF-2018-0312018

Combined measurements of Higgs boson production and decay using up to 80 invfb of proton–proton collision data at 13 TeV collected with the ATLAS experiment

CONTACT

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LinkedIn
Guillermo Hamity

Github
just-a-box

Gitlab
ghamity

Twitter
HamityNicolas

EDUCATION

2019
2015

The University of Sheffield (UK)

PhD in High Energy Particle Physics

2015
2013

The University of Witwatersrand (ZAR)

MSc in Physics

2012
2008

The University of Pretoria (ZAR)

BSc and Honours in Physics

SKILLS

Python

PythonTensorflowScipyKerasPandasNumpyJupytermatplotlib

C++

C++CMakeUnit Tests

Statistics

Neural NetworksLikelihood ModelsROOTRooStats

Tools

LinuxLatexEmacsVS-CodeOrgModeMarkdown

Dev

GitGit-CIDockerYAMLJSONKubernetes

Hardware

Raspberry-piElectronicsMachine CodeSoldering

WebDev

HobbyistHTMLCSSApacheSQLTorOnionShare

LANGUAGES

English

Native

Spanish

Native

Afrikaans

Conversational

French

Beginner

REFERENCES

Postdoc Project Supervisor

— Proffesor Sinead Farrington

PhD Supervisor

— Dr Trevor Vickey, Reader in Particle Physics and Astrophysics