

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 in the ATLAS Experiment at the Large Hadron Collider, searching for long-lived exotic particles. 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 experienced in collaborative research. My doctoral research focused on Higgs searches and interpretations, and building and testing of silicon strip modules for the ITk upgrade. I am integrated into leadership roles within ATLAS and have experience with lecturing and student supervision.

WORK EXPERIENCE

Lecturing

September 2021 – Present

The University of Edinburgh

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

August 2019 – Present

The University of Edinburgh

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

Development and deployment of tracking and tau-lepton identification both in the ATLAS tau lepton reconstruction and trigger.

Delivery of a tau trigger algorithm using recurrent neural-network for LHC Run3.

Work on Run-2 and 3 publications, including trigger and offline performance. Contributing to publication of precision measurements and exotic searches. Reviewing publications of two publications.

Supervise PhD students on analysis and qualification tasks within experiment.

Convene the tau reconstruction and identification subgroup meetings. Develop common c++/python analysis tools used in the collaboration.

PhD research

August 2015 – July 2019

The University of Sheffield

PhD candidate

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

Highlights

Performed statistical analysis of exotic Higgs and charged Higgs publications. Developed 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.

Construction and testing of ITk silicon modules.

Attended several schools on computing, machine learning, and particle physics. Teaching Assistant for several mathematics, physics and programming courses.

PUBLICATIONS

ATLAS-CONF-2022-034

2022

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)139

2018

J. High Energ. Phys. 2018, 139

JHEP01(2018)055

2018

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)055

2018

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

ATLAS-CONF-2018-031

2018

Search for additional heavy neutral Higgs and gauge bosons in the ditau final state produced in 36 fb⁻¹ of pp collisions at $\sqrt{s} = 13$ TeV with the ATLAS detector.

ATLAS-CONF-2018-031

2018

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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https://www2.ph.ed.ac.uk/~ghamity/

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

Python

Tensorflow

Scipy

Keras

Pandas

Numpy

Jupyter

matplotlib

C++

C++

CMake

Unit Tests

Statistics

Neural Networks

Likelihood Models

ROOT

RooStats

Tools

Linux

Latex

Emacs

VS-Code

OrgMode

Markdown

Dev

Git

Git-CI

Docker

YAML

JSON

Kubernetes

Hardware

Hobbyist

Raspberry-pi

Electronics

Machine Code

Soldering

WebDev

Hobbyist

HTML

CSS

Apache

SQL

Tor

OnionShare

LANGUAGES

English

Native

Spanish

Native

Afrikaans

Conversational

French

Beginner

REFERENCES

Professor Sinead Farrington

— Research Primary Investigator, University of Edinburgh

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Dr Trevor Vickey

— PhD Supervisor, University of Sheffield

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