



Guillermo Hamity


Researcher | PhD in Particle Physics



Contact


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Languages

 English – Native

 Spanish – Native

 Afrikaans – Conversational

 French – Beginner




About me

Postdoctoral Research Associate in Experimental High Energy Particle Physics at the University of Edinburgh. Research new physics in the ATLAS Experiment at the Large Hadron Collider. Passionate about applied data analysis with expertise in code development and deployment, data preparation, distributed computing, machine learning, model fittings and hypothesis testing. Involved in several leading publications and am experienced in collaborative research. I am integrated into leadership roles within the ATLAS Collaboration and have experience with lecturing and student supervision.

WORK EXPERIENCE

2019-08-01
Ongoing



Postdoctoral Research Associate  The University of Edinburgh
ATLAS Experiment

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.

Research

- Development of all areas of physics analysis, incl.: data selection, software infrastructure development and maintenance, algorithm design and deployment, and statistical interpretation.
- Development and deployment of software for particle tracking and identification in the ATLAS particle reconstruction and triggering.
- Delivery of software algorithms using neural-networks for particle identification, as well as develop common c++/python analysis tools used in the collaboration.
- Research analysis leader, involved in ongoing publications, including technical reports. Experienced in paper writing and peer-review in leading journals. Present at international conferences.
- Convene over research team in group meetings with regular communication and group work/interactions. Supervise several PhD students on analysis and tasks within the working group.

Lecturing

- Deliver lectures and workshops on machine learning with an emphasis on applicability in the field of particle physics.
- Designed MSc machine learning project using novel techniques in ML and image processing in physics. Oversee supervision and marking, and supervised honours student projects.

EDUCATION

2015-08-01
2019-07-01



PhD research
ATLAS Experiment


 The University of Sheffield

Thesis: Probing the Beyond the Standard Model Higgs Sector using the ATLAS Detector

- Performed statistical analysis of Higgs and charged Higgs publications. Developed code and workflow for statistical interpretation and interpretation of the analysis results.
- Conducted statistical interpretation of the Higgs precision measurement in the context of exotic physics models.
- Worked within common performance groups to deliver on early 2016 performance results.
- Worked on the construction and testing of silicon particle detectors for the ATLAS upgrade.
- Attended several schools on computing, machine learning, and particle physics. Teaching Assistant for several mathematics, physics and programming courses. Presented at international conferences.

2013–2015

MSc in Physics

 The University of Witwatersrand (ZAR)

2008–2012

BSc and Honours in Physics

 The University of Pretoria (ZAR)

Professional Skills

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

Hobbies

Raspberry-pi

Electronics

Machine Code

Soldering

HTML

CSS

Apache

SQL

OnionShare

Tor

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CONFERENCES AND TRAINING

Attended the following training courses/schools:




- **5th HEP C++ Course and Hands-on Training - Advanced C++**, CERN, 11-13 Oct 2022
- **1st HEP C++ Course and Hands-on Training**, CERN, 12-16 Oct 2020
- **Analysis Preservation Bootcamp – GitLab CI/CD and Docker Fundamentals**, CERN, 17-19 Feb 2020
- **Fourth Machine Learning in High Energy Physics Summer School 2018**, University of Oxford, 6-12 Aug 2018
- **2017 European School of High-Energy Physics**, Evora Portugal, 6-19 Sept 2017
- **2016 HEP School for Experimental High Energy Physics Students**, University of Lancaster, 4-15 Sept 2016

and presented at these international conferences

- **56th Rencontres de Moriond on QCD and High Energy Interactions**, *Exotic Higgs at ATLAS and CMS*, La Thuile Italy, 19-26 March, 2022
- **21st High-Energy Physics International Conference In QCD**, *Higgs boson cross-section measurements at ATLAS*, Montpellier Fr , 2-6 July 2018
- **Kruger 2014: Workshop on Discovery Physics at the LHC** , *Beyond-the-Standard Model Higgs physics using the ATLAS experiment*, South Africa , 26 Nov, 2014

and dozens of internal workshops and conferences over the years.

RECENT PUBLICATIONS

PhysRevLett. 125.051801 2020	Search for Heavy Higgs Boson decaying into Two Tau Leptons with the ATLAS Detector Using pp collisions at $\sqrt{s} = 13$ TeV, Phys. Rev. Lett. 125 , 051801 , <i>ATLAS</i>  10.1103/PhysRevLett.125.051801
PhysRevD. 101.012002 2020	Combined measurements of Higgs boson production and decay using up to 80 fb^{-1} of proton–proton collision data at 13 TeV collected with the ATLAS experiment, Phys. Rev. D 101 , 012002 , <i>ATLAS</i>  10.1103/PhysRevD.101.012002
JHEP09(2018)139 2018	Search for charged Higgs bosons decaying via $H^{\pm} \rightarrow \tau \nu$ 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, J. High Energ. Phys. 2018 , 139 , <i>ATLAS</i>  10.1007/JHEP09(2018)139
ATLAS-CONF-2022-034 2022	Search for heavy long-lived multi-charged particles in the full Run-II pp collision data at $\sqrt{s} = 13$ TeV using the ATLAS detector, ATLAS https://cds.cern.ch/record/2810156
ATL-PHYS-PUB-2022-044 2022	Reconstruction, Identification, and Calibration of hadronically decaying tau leptons with the ATLAS detector for the LHC Run 3 and reprocessed Run 2 data, ATLAS https://cds.cern.ch/record/2827111

REFERENCES

Professor Sinead Farrington

Website,

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- *Research Primary Investigator, University of Edinburgh*

Dr Trevor Vickey

Website,

t.vickey@sheffield.ac.uk

- *PhD Supervisor, University of Sheffield*

Dr Nikolaos Rompotis

Website,

Nikolaos.Rompotis@liverpool.ac.uk

- *Work Colleague, University of Liverpool*