Rob Roy Fletcher

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I am a current Ph.D. candidate in high energy physics working on the ATLAS experiment at the Large Hadron Collider. My goal is to find a career in the technology industry that will allow me to use my software and data analysis skills to help develop machine learning solutions to interesting challenges. I am looking for a collaborative, team environment focused on innovation and problem solving.

Education

Anticipated 2018	Ph.D. Experimental High Energy Physics, **The University of Pennsylvania**, Philadelphia Advisor: Prof. I. Joseph Kroll
May 2014	Master of Science in Physics, **The University of Pennsylvania**, Philadelphia Advisor: Prof. I. Joseph Kroll Gpa: 3.88/4.0
June 2012	Bachelor of Science in Physics and Applied Mathematics Cum Laude | **The University of California**, Riverside Advisor: Prof. Gail Hanson Gpa: 3.73/4.0

Computer Skills

Experience writing code for large frameworks used in scientific computing. Integrating machine learning libraries (scikit-learn, TMVA) into analysis packages. Participated in management of code with version control systems (SVN, Git), issue tracking systems (JIRA, Git) and documentation with Doxygen.

Advanced Knowledge:	C++, Python, ROOT and PyROOT, Linux and Unix Systems
Intermediate Knowledge:	HTML, Javascript, CSS, AutoCAD, Fusion360, LaTeX,
Basic Knowledge:	Docker, PHP, Go

Hardware Skills

Knowledge and experience with 3D printing, rapid prototyping and GCode. Using 3D modeling software, I have designed, produced and tested components and assemblies.
Experience with digital and analogue circuits including several common microcontrollers (Arduino, Basic Series, Atmel chips)

Work Experience

Current – July 2012 | Ph.D. student - University of Pennsylvania, Philadelphia
Researcher on ATLAS Experiment

- My dissertation work focuses on a search for low-mass di-photon resonances using the two Higgs doublet model as a benchmark.
- Developed new background modeling technique based on Gaussian Process Regression and integrate it into a statistical model.
- Automated the validation of dataset transformations with web based reporting.
- I developed methods and software for a likelihood based classification and analysis.
- TA duties including grading and teaching undergraduate physics laboratories.

March 2010-June 2012 | Undergraduate Researcher - University of California, Riverside

- Performed analysis on data collected by the Muon Ionization Cooling Experiment (MICE), both onsite at the Rutherford Appleton Laboratory (RAL) in Didcot, UK, and remotely from Riverside, CA
- Studied the contamination of neutral particles in the muon beam.
- Developed software for the MAUS data analysis framework. Worked on several parts of analysis code as well as a majority of the code that runs a set of three Time-of-Flight detectors.
- Worked on data collection shifts in the MICE control room at RAL.

Jan 2011-Mar 2011 | Suplemental Instructor - Riverside Community College, STEM Center, Riverside, CA

- Supplemental Instructor for PHYS-4A – Classical Mechanics
- Responsible for 3 hours of lecture per week
- Assisted with running the laboratory sessions

Presentations

Aug. 2014 **Electron ID in Run 2**, US ATLAS meeting, University of Washington Seattle, WA

Selected Publications

July 2017 **Search for new phenomena in high-mass diphoton final states using 37 fb−1 of proton-proton collisions collected at s√=13 TeV with the ATLAS det**
The ATLAS collaboration
Phys. Lett. B 775 (2017) 105
arXiv:1707.04147 [hep-ex]

Jun. 2016 **Electron efficiency Measurements with the ATLAS Detector using the 2015 LHC proton-proton collision data**,
ATLAS Collaboration, 51st Rencontres de Moriond on QCD and High Energy Interactions, La Thuile, Italy,
https://cds.cern.ch/record/2157687

May 2012 **The MICE Muon Beam on ISIS and the Beam-Line Instrumentation of the Muon Ionization Cooling Experiment**, M. Bogomilov et al., Journal of Instrumentation 2012 JINST 7 P05009, arXiv:1203.4089

March 2011 **Measurement of Neutral Particle Contamination in the MICE Muon Beam**, R. Fletcher, L. Coney, G. Hanson, Published in the Proceedes of the Particle Accelerator Conference 2011, New York, NY, arXiv:1105.0645

Awards

Sept. 2016 **PennAppsXIV - 3rd Place Overall and Taser/Axon sponsor prize for Best Public Safety and Video Processing App** for a user and object relative tracking transparent heads up display (eyeHUD, http://devpost.com/software/eyehud).

Jan. 2016 **PennAppsXIII - 1st Place** for implementation of an RF communication using motherboard RAM bus.

Sept. 2015 **The Chairmans Teaching Award**, University of Pennsylvania

June 2012 **Science Circle Award of Excelence**, University of California, Riverside

May 2012 **Academic Excelence Award in Physics**, University of California, Riverside

Sept. 2011 **Student Travel Grant**, International Particle Accelerator Conference

May 2010 **Dean's Fellowship**, University of California, Riverside, College of Natural and Agricultural Sciences

May 2009 **Summer Bridge to Research Grant**, University of California, Riverside, College of Natural and Agricultural Sciences