Andrew Hard

Résumé

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Education

2016 (Expected) — **Doctor of Philosophy** in Physics
University of Wisconsin, Madison WI, USA
Thesis: *Searches and Discoveries with the resonant $\gamma\gamma$ final state at ATLAS*
Advised by Prof. Sau Lan Wu

2010 — **Bachelor of Arts** in Physics, Honors
University of Chicago, Chicago IL, USA
Advised by Prof. Edward Blucher

Experience

2011 - 2016 — **Graduate Research Assistant**, *Department of Physics, University of Wisconsin*
- Discovered Higgs boson, performed first measurements of mass, couplings, and spin
- Contributed significantly to 19 papers & notes, author on 250+ ATLAS publications
- Statistical expert for multiple physics analyses, developed toy Monte Carlo tools
- Invented algorithm to spatially and temporally match CMOS chip hits at LBNL
- Developed analysis software with C++, ROOT, & shell scripts for ATLAS collaboration
- Optimized physics searches in large phase spaces using massive datasets $O(10$ TB$)$
- Wrote and coordinated DoE funding reports for Wisconsin ATLAS Group

2014 — **Graduate Teaching Assistant**, *Department of Physics, University of Wisconsin*
- Led discussions and labs on classical mechanics, electrodynamics, thermodynamics
- Designed supplemental exercises and summary notes that boosted exam performances

2010 - 2011 — **CERN Technologist**, *Enrico Fermi Institute, University of Chicago*
- Electronic calibration expert for the ATLAS Experiment hadronic calorimeter
- Developed & maintained calibration software package using python and SQL
- Documented, monitored and reported on detector status to collaboration

2009 - 2010 — **Undergraduate Research Assistant**, *Enrico Fermi Institute, University of Chicago*
- Developed particle detector simulation in C++, ROOT, and Geant4
- Constructed μ particle modules, worked in machine shop, tested electronics

Skills

Scientific — Physics, Statistics, Monte Carlo Simulation, Numerical Methods, Data Structures, High Throughput Computing, Collaborative Research, Public Presentation, Machine Learning

Programming — C++, Python, Java, LaTeX, Unix/Linux shell scripting, ROOT, Matlab, SQL, TensorFlow

Languages — English (native), French (basic oral and written communication)

Volunteering & Outreach

- Newtonian physics demonstration for Chicago Public Library — 2016
- US voter outreach & registration at CERN — 2016
- Discussed research & funding with U.S. lawmakers in Washington D.C. — 2014, 2015
- Created GIF visualizations of Higgs boson discovery data — 2013
- Visited classrooms at the Chattanooga School for the Arts & Sciences — 2012

Awards

2015 — **Teaching Assistant Rookie of the Year**, *Department of Physics, University of Wisconsin*
2013, 2014 — **Lightning Round Winner**, *US LHC User's Association Annual Meeting*