

Alan WILSON

Education

- 2011 **Ph.D. Experimental Particle Physics**, *University of Michigan*, Ann Arbor.
- 2003 **M.S. Mathematics**, *University of Michigan*, Ann Arbor.
- 1999 **B.S. Computer Engineering**, *University of Washington*, Seattle.
- 1999 **B.S. Mathematical Sciences**, *University of Washington*, Seattle.

Proficiencies & technical interests

Almost every day

- Python, C++
- git, svn, etc.
- numpy+scipy+matplotlib
- iPython notebook
- Standard linux tools, VMs
- PowerPoint, wiki docs, etc.

Occasionally

- SQL variants
- Statistical modeling
- Machine learning (decision trees)
- AWS, cluster/Grid computing
- Shell scripting

Dabble in

- Javascript, Perl
- Mathematica and Matlab
- Lisp dialects
- (Social) network analysis
- Coding/compression theory

Experience

- 2014–PRESENT **Fellow at Insight Data Science**, Mountain View, CA.
 - Developed web app ELI5orPhD which recommends alternative news articles at a different sophistication levels.
 - Scraped Google News, news sources with scrapy, BeautifulSoup, and goose for article content.
 - Using nltk to tokenize articles, cluster, and ranking by sophistication measures such as reading level.
- 2011–2013 **Post Doctoral Research Fellow**, *ATLAS Experiment*, Geneva, Switzerland.

Discovered the Higgs boson, part of the largest scientific *collaboration* in the world.

 - Analyzed and quantified discrepancies from expectation in data using Monte Carlo simulation and side-band data
 - *Wrote readable, modular, and accurate code* to run in batch (Condor) and on the world-wide Grid to analyze *terabytes of data*
 - *Developed framework* for efficiently specifying, building, and sharing plots and another for defining *unit tests* of numerical quantities in (L^AT_EX) documents
 - Controlled experiment-wide data acquisition, involving *reacting quickly and communicating problems efficiently*.
 - *Mentored* graduate students and was the hilightprimary editor for papers and internal documents.
- 2005–2010 **Graduate Student Research Assistant**, *ATLAS & DØ Experiments*, Michigan & Illinois.
 - *Thesis topic*: a search for new physics via the $Z(\rightarrow \ell\ell)\gamma + \text{missing } E_T$ final state.
 - A complete analysis starting with theory and eventually constraining that theory with data.
 - Applied machine learning, specifically *boosted decision trees*, for identifying signal cleanly and efficiently.
 - Used statistics to quantify constraints on theory imposed by the observation.
 - *Expert role managing Monte Carlo simulation jobs*: responding to my colleagues' requests and translating them into tested job specifications, submitting the jobs, and monitoring the results.
 - On-line control, monitoring, and problem solving for the data taking of a large experiment
 - *Primary contributor* to large, public documents quantifying experimental sensitivity to new physics.
 - Implemented tools for calculating confidence regions via *marginalized likelihoods*.
 - Collaborated with engineers, technicians, and many other physicists on hardware and analysis projects.
- 2004–2005 **Research Assistant**, *ATLAS Experiment*, Univ. of Michigan, Geneva, Switzerland.
 - *Validated* muon reconstruction software with systematic comparisons, *uncovering bugs* and reporting on them.
 - *leading a team* of five students to complete assembly and testing of large detector components.