

Shannon M. Zelitch

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Summary

Experience working within a 600 member international physics collaboration. Strengths include creativity, approachability and multi-tasking. Ability to work through problems independently or collaboratively and articulate solutions to others.

Skills

Adapting analysis procedures to allow parallel problem solving and framework development
Presenting clear and concise updates on current work to group members
Incorporating new data rapidly and updating documentation

Computing:

Programming and scripting: C++, perl
Operating systems: Unix/Linux, Windows
Office software suites: OpenOffice, Microsoft Office
Video-conferencing: EVO, POLYCOM

Analysis Software:

ROOT - object oriented framework, histograms, neural network
StatPatternRecognition - boosted decision tree, random forest

Experience

Collaboration Member at DZero Detector Experiment

Research, >200 employees

05/2004 - present

DZero is an international collaboration of 600 physicists working on high energy elementary particle research at Fermi National Accelerator Lab in Batavia, IL

Dissertation research: search for the only Standard Model particle not yet observed in experiment, the Higgs Boson, using 8.5 billion DZero detector events in a previously unutilized Higgs particle decay channel: Higgs to WW* to muon+neutrino+jet+jet

Wrote programs to interface with existing C++ common analysis code. Performed detailed studies of simulated background events to ensure proper data modeling. Documented and streamlined processing of "zero-bias" data samples to model detector noise and physics event pileup for DZero Monte Carlo background production. Identified well-modeled physics distributions, used as inputs to multivariate techniques for signal/background separation. Adhered to strict DZero systematic error protocol to enable combination of result with other Standard Model Higgs searches. Coordinate weekly video-conference between University of Virginia, Columbia University and Fermilab collaborators on Higgs decay channel.

More than 60 internal presentations on Higgs searches and common analysis tools since 2007. Upcoming public presentations on Higgs decay channel:
76th Meeting American Physical Society Southeastern Section
American Physical Society April 2010 Meeting

Data Acquisition Shifter on site at the DZero detector: monitored the dataflow from the detector components through the Level 1 / Level 2 / Level 3 Trigger systems. Assisted current Level 2 experts fix and diagnose system problems while on shift in the control room and 24hrs/day during pager rotation.

Teaching Assistant at University of Virginia

Education Management, 50-200 employees
08/2004 - 05/2007

Developed course materials on principles of basic Mechanics and Electromagnetism. Explained complex physics concepts in simple language to groups of 20-30 undergraduates during recitation sections and office hours.

Energy Research Undergraduate Laboratory Fellow at Dept. of Energy, Office of Science

Government Administration, 0-10 employees
05/1999 - 08/1999

Supervised team of three interns. Coordinated first Faculty and Student Undergraduate Research Education Conference (FA SURE). Arranged interviews for DOE fellows with congressional staff. Wrote press releases, letters, etc. regarding Office of Science education programs. Spokesperson on the importance of research at the undergraduate level at Office of Science Meetings.

Studies

Experimental High Energy Physics at University of Virginia

PhD

05/2004 - present

Expected graduation, May 2010

Dissertation Topic: Search for Standard Model Higgs at the Tevatron

Fine Arts at New College of Florida

College

08/1996 - 05/2000

Undergraduate Research Internships at Fermi National Accelerator Lab, Argonne National Lab and the Pennsylvania State University Lab for Elementary Particle Science

Publications

DZero Collaboration Member with Author Status, June 2008 - present

46 collaboration papers

<http://www.slac.stanford.edu/spires/find/hep/www?AUTHOR=Zelitch>

"Fake Jets from Muon Bremsstrahlung in p17 W+(0-5)lp MC" M. Buehler, B. Hirosky, S. Zelitch

DZero Note 5517, October 2007

Note was written by Zelitch, edited by Hirosky. Zelitch wrote the analysis code to produce the comparison plots suggested and reviewed by Hirosky and Buehler. Zelitch presented results to DZero collaborators.

"Level 2 Vertex Corrections" B. Hirosky, S. Zelitch

DZero Note 4926, September 2005

Note was written by Zelitch, edited by Hirosky. Zelitch wrote the analysis code extract the level 2 trigger track information associated with an event's primary vertex.

**"Comparison of LED and Cs Data Signals for the ANL Optical Test Module" B. Stanek, S. Zelitch
Atlas Note [ATL-TILECAL-99-017], July 1999
Zelitch ran Cesium and LED source tests on detector prototype and co-authored note.**

Awards

**Universities Research Association Visiting Scholar, May 2008 - January 2009
Awarded \$14,350 to fund on-site research at Fermi National Accelerator Lab on Standard Model Higgs Search**