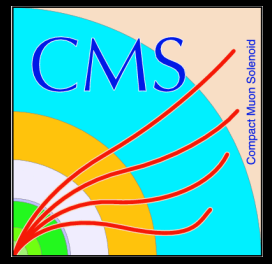

The LPC and Me

Andrew Askew

July 17, 2014

A few personal thoughts:

- I joined the CMS Experiment in 2005.
  - I was a brand new postdoc, more to the point, I was one of these "hybrid" postdocs. Idea being that my time would be split 50/50 between work at the Tevatron on DZero and work on CMS.
  - Probably worth pointing out in a lot of cases this didn't work very well. Because let's face it: that's hard, usually ended up with EITHER the postdoc doing 90/10 (one or the other) OR being less than effectual on both (effectively not getting the benefit for the inefficiency).

A difference maker:

- So I might have fallen into that same trap, but for that there was an LPC. There is likely a groove worn in the ring road from me roving back and forth from DZero to the highrise.
  - I still park inside the ring habitually.
- Just having discrete locales allowed me to partition my efforts a lot more effectively. It sounds somewhat stupid, but it was a real difference.
- In more human terms, it grew the number of people I knew working on CMS by a lot, and in a collaboration this big…

The Ground Floor:

- So being here was important. But this was also close to coincident with ORCA →CMSSW. And there were opportunities to see how this new reconstruction worked, and calls for volunteers to help with re-implementing what ORCA did in the new framework.
- This real "bare metal" look at how the reconstruction worked paid off in a real way later when it came to understanding what the detector was telling us. It also paid off in knowing what to change as we learned.

The Jump:

- I made the jump from postdoc to professor a little bit before the halfway point (Fall 09). This coincidentally was slightly before our very first data, as well as our first CMSDAS.
- I'd LIKE to think I would have descended on that first data as intensely otherwise, but putting together a first set of exercises for people with just that data from the end of 2009…
- That's also how we ended up on the front lines of finding spikes in the ECAL barrel.

Getting started:

- Turns out that becoming a professor doesn't solve any problems, it merely expands them.
- Having the LPC as a base to operate out of, and having the support of people there (sometimes even financially) made a big difference in getting my program off the ground.
- In turn, the programs like CMSDAS, like the Distinguished Researcher were interesting opportunities and made me **want** to participate.
- And now I have students and a postdoc of my own who get to take advantage of this place, which I've always called "the capitol city of USCMS".

Those are all words.

- I try not to use Powerpoint unless you have something visual to express.
- So I prepared something visual.

My CV: At least in short form

Curriculum Vitae
Andrew W. Askew
askew@hep.fsu.edu

Present Employment: Florida State University
Assistant Professor
CMS Experiment, CERN
D0 Experiment, Fermilab

Academic Training:

2001-2004 Rice University — Ph. D Physics
Thesis: *Measurement of the Wγ→μνγ Cross Section, Limits on Anomalous Trilinear Vector Boson Couplings, and the Radiation Amplitude Zero in $p\bar{p}$ Collisions at $\sqrt{s}$ =1.96 TeV*

1999-2001 Rice University — M. S. Physics
Thesis: *A Comparison of Multivariate Data Analysis Techniques as Applied to the Identification of Electrons and Tau Leptons*
Advisor: B. Paul Padley

1995-1999 University of Houston — B. S. Physics
Thesis: *An Experimental Study of Longitudinal Polarization in Cosmic Ray Muons*
Advisor: Kwong Lau

Employment History:
Jan. 2005 – Sept. 2008 Postdoctoral Fellow, Florida State University
Sept. 2008 – Aug. 2009 Postdoctoral Fellow, Rutgers University
Aug. 2009 – Present Assistant Professor, Florida State University

Selected Primary Authorship Publications (CMS):

S. Chatrchyan *et al.* [CMS Collaboration], ``Measurement of the production cross section for Zγ→νγγ in pp collisions at $\sqrt{s}$ = 7 TeV and limits on ZZγ and Zγγ triple gauge boson couplings," **JHEP 1310**, 164 (2013).

S. Chatrchyan *et al.* [CMS Collaboration], ``Search for new physics in events with photons, jets, and missing transverse energy in pp collisions at $\sqrt{s}$ =7 TeV," **JHEP 1303**, 111 (2013).

S. Chatrchyan *et al.* [CMS Collaboration], ``Search for supersymmetry in events with photons and low missing transverse energy in pp collisions at $\sqrt{s}$ =7 TeV," **Phys. Lett. B 719**, 42 (2013).

S. Chatrchyan *et al.* [CMS Collaboration] `` Search for Dark Matter and Large Extra Dimensions in pp Collisions Yielding a Photon and Missing Transverse Energy", **Phys. Rev. Lett. 108**, 261803 (2012).

S. Chatrchyan *et al.* [CMS Collaboration] ``Search for Supersymmetry in pp Collisions at $\sqrt{s}$ =7 TeV in Events with Two Photons and Missing Transverse Energy", **Phys. Rev. Lett. 106**, 218001 (2011).

Selected Primary Authorship Publications (D0):

V. M. Abazov *et al.* [D0 Collaboration], ``Measurement of the muon charge asymmetry in $p\bar{p} \rightarrow W + X \rightarrow \mu\nu + X$ events at $\sqrt{s}$ = 1.96 TeV," **Phys. Rev. D 88**, 091102 (2013).

V. M. Abazov *et al.* [D0 Collaboration], ``Search for resonant WW and WZ production in $p\bar{p}$ collisions at $\sqrt{s}$=1.96 TeV," **Phys. Rev. Lett. 107**, 011801 (2011).

V. M. Abazov *et al.* [D0 Collaboration], ``Search for Flavor Changing Neutral Currents in Decays of Top Quarks," **Phys. Lett. B 701**, 313 (2011).

V. M. Abazov *et al.* [D0 Collaboration] "Measurement of the WZ—lνll Cross Section and Limits on Anomalous Triple Gauge Couplings in $p\bar{p}$ Collisions at $\sqrt{s}$ =1.96 TeV", **Phys. Lett. B 695**, 67 (2011).

V. M. Abazov *et al.* [D0 Collaboration] "Search for a Resonance Decaying into WZ Boson Pairs in $p\bar{p}$ Collisions", **Phys. Rev. Lett. 104**, 061801 (2010)

V. M. Abazov *et al.* [D0 Collaboration], "Measurement of the electron charge asymmetry in $p\bar{p} \rightarrow W+X \rightarrow e\nu+X$ events at $\sqrt{s}$ =1.96 TeV", **Phys. Rev. Lett.**101, 211801 (2008).

V. M. Abazov *et al.* [D0 Collaboration], "First study of the radiation-amplitude zero in Wγ production and limits on anomalous WWγ couplings at $\sqrt{s}$ =1.96 TeV", **Phys. Rev. Lett.** 100, 24105 (2008).

V. M. Abazov *et al.* [D0 Collaboration], "Measurement of the $p\bar{p} \rightarrow$WZ+X Cross Section at $\sqrt{s}$ =1.96 TeV and Limits on WWZ Trilinear Gauge Couplings", **Phys. Rev. D** 76, 111104 (2007).

V. M. Abazov *et al.* [D0 Collaboration], "Measurement of the $p\bar{p} \rightarrow$ Wγ + X cross section at $\sqrt{s}$ =1.96 TeV and WWγ anomalous coupling limits," **Phys. Rev. D 71**, 091108 (2005).

V. M. Abazov *et al.* [D0 Collaboration], "Study of Zγ events and limits on anomalous ZZγ and Zγγ couplings in $p\bar{p}$ collisions at $\sqrt{s}$ = 1.96-TeV," **Phys. Rev. Lett.** 95, 051802 (2005).

Signing all papers on D0 Experiment since 2002.
Signing all papers on CMS Experiment since 2006.

Conference Talks:

"Direct Photon Production at the LHC", Presented at **Blois2013**: Rencontres de Blois on "Particle Physics and Cosmology", Blois, France, May 28, 2013. On behalf of the ATLAS and CMS experiments.

"Searches for Supersymmetry with the CMS detector at the LHC", Presented at **Kruger2012**, Kruger, South Africa, Dec. 7, 2012. On behalf of the CMS experiment.

"Electroweak and Hints of New Phenomena at the Tevatron", Presented at **Physics at the LHC**, Vancouver, Canada, June 8th, 2012. On behalf of the D0 and CDF experiments.

"Recent results on BSM searches at CMS", Presented at the **Fermilab Joint Experimental-Theoretical Physics Seminar**, Batavia, United States, Jul. 29th,2011. On behalf of the CMS Collaboration.

"Beyond the Standard Model Searches at the Tevatron", Presented at **Aspen Winter Conference 2011**, Aspen, United States, Feb. 12-18, 2011. On behalf of the D0 and CDF experiments.

"Hadron Physics at the LHC", Presented at **Hadron 2009**, Tallahassee, United States, Nov. 29- Dec. 4, 2009. On behalf of the CMS, ATLAS and LHCb experiments.

"Status of the CMS Experiment", presented at the **76th annual meeting of the Southeastern Section of the American Physical Society** (SESAPS), Atlanta, United States, Nov. 13, 2009.

"Recent Electroweak Measurements at the Tevatron", Presented at the **14th Lomonosov Conference on Elementary Particle Physics**, Moscow, Russia, August 19-25, 2009. On behalf of the D0 and CDF experiments.

"Searches for Exotica in CMS", Presented at the **Brookhaven Forum 2008 Terra Incognita: From LHC to Cosmology**, Upton, United States, November 6-8, 2008. On behalf of the CMS Collaboration.

"Recent D0 Results", Presented at the **Fermilab Joint Experimental-Theoretical Physics Seminar**, as a part of the 2008 Hadron Collider Physics Summer School, Batavia, United States, August 15, 2008. On behalf of the D0 Collaboration.

"Alternative New Physics at the LHC", presented at "Anticipating New Physics at the LHC", a conference hosted by the Kavli Institute for Theoretical Physics at the **University of California-Santa Barbara**, June 2-6, 2008. On behalf of the CMS and ATLAS collaborations.

"Electroweak Measurements (including Dibosons) at the Tevatron", presented at the **XXIst Rencontres de Physique de la Valle d'Aoste**, La Thuile, Italy, Feb. 24-Mar. 1, 2008. On behalf of the D0 and CDF Collaborations.

"Electroweak Cross Sections, Asymmetries, and Diboson Results from the Tevatron", presented at **HCP2007**, Elba, Italy, May 20-25, 2007. On behalf of the D0 and CDF Collaborations.

"Recent Diboson and Electroweak Results from Dzero", Presented at the **Fermilab Joint Experimental-Theoretical Physics Seminar**, Batavia, United States, June 23, 2006. On behalf of the D0 Collaboration.

"Diboson Cross Sections at $\sqrt{s}$ = 1.96 TeV", Presented at the **XXXXth Rencontres de Moriond** on QCD and High Energy Hadronic Interactions, La Thuile, Italy, Mar. 12-19, 2005. On behalf of the D0 and CDF Collaborations.

Seminars/Colloquia:

"Seeing the Light: Physics with Photons at the LHC", a colloquia given for the Florida State University physics department, February 20th, 2014.

"Searches for New Physics with the CMS Experiment at the LHC", a seminar given at the FSU/FAMU College of Engineering, Dec. 2nd, 2011.

"Let there be Light: Photons and the CMS Experiment", a seminar given at Rice University, Dec. 2, 2010.

"Electroweak Physics at D0: Stories the W can tell…", a colloquium given at Florida State University, Jan. 26, 2009.

"Electroweak Symmetry Breaking, Bosons, and Di-bosons", a seminar given at the California Institute of Technology, April 8, 2008.

"Life, the Universe, and Electroweak Symmetry Breaking," a colloquium given at the University of Virginia, February 8, 2008.

"New Diboson Results from Dzero", a seminar given at Northwestern University, Jan. 31, 2005.

Leadership Experience:

Monophoton Analysis (2012-present): In charge of overall analysis strategy for both efficiency determination and background estimation in the CMS Run-I photon plus missing transverse energy analysis.

Analysis Contact CMS SUSY Reference Analysis 3 (2010-2012): Analysis contact for gauge mediated supersymmetry search (in diphotons) in CMS supersymmetry group. Responsible for producing analysis of first collision data in 2010 for publication.

D0 Electroweak Physics Group convenor (2006-2007): Responsible for management of all Electroweak physics group analyses (Cross sections, production properties, boson properties and diboson production and decay), as well as trigger strategy, publication schedule and personnel management.

Analysis Coordinator for 2006 CMS H2 ECAL TB (2006): Managed ECAL analysis efforts for combined 'slice' of CMS central calorimeter in H2 test beam. Responsible for coordinating software releases, common selection cuts, and analysis framework.

D0 Diboson Subgroup convenor (2005-2006): Management of analyses in Diboson subgroup of Electroweak physics group. Worked intensely with all students within the group towards publishable results.

Algorithm Experience:

CMS ECAL Clustering and Anomalous Signals (2009-present): Characterization and mediation of anomalous signals (from neutron interactions) within the CMS electromagnetic calorimeter. Adaptation and maintenance of clustering/analysis quantities mitigating these effects.

D0 Tracker Characterization (2010-2011): Studies and characterization of track reconstruction as a function of solenoid polarity. Related to systematic studies required for muon charge asymmetry.

CMS Photon Identification for Startup (2008): Development of a basic, verifiable, selection of photon objects for early CMS data. Also developed necessary reconstruction/analysis infrastructure for basic photon identification.

In situ measurement of CMS tracker material (2005-2007): Development of a novel technique for measuring the relative material distribution in the tracking system using π^0 events in which one and only one of the photons converts. High granularity of CMS ECAL makes separation and measurement of the three body (electron-positron, photon) mass possible for control of backgrounds.

D0 High luminosity trigger studies (2006-2007): Involved in testing and validation of high instantaneous luminosity triggers (such as online missing transverse energy and tracker occupancy vetoes) needed for maintaining the D0 physics program in Tevatron Run IIb.

D0 Preshower Cluster Shapes (2006): Developed shower shape quantities based on the three individual scintillating layers of the D0 central preshower detector, now widely used for analyses with photons.

CMS Algorithm development (2005-2006): Reimplementation the ORCA 'Hybrid' electron clustering algorithm within the new CMSSW software infrastructure. Code completely replicates previous ORCA performance for recovery of energy from bremsstrahlung photons.

D0 Selection criteria for isolated photons for diboson analyses (2004): Measured probability for a jet to fake a photon used in both Zγ and Wγ background estimates. Assisted in developing systematics for p14 certified photon identification.

D0 Muon System Resolution (2003): Studied muon system resolution using central track information. Parametrized central and forward muon sytem resolutions for analysis. Implemented resolutions in the Parametrized Monte Carlo Simulation (PMCS).

D0 Central Preshower Clustering (2003): Studied comparison between simple calorimeter-tracker based track association and use of preshower information. Developed cuts improving efficiency and fake rate over previous method, and implemented calorimeter-central preshower pointing code in electromagnetic reconstruction.

Hardware experience:

CMS H2 Combined Test Beam (2006): Measurement of the response of the CMS barrel calorimeter, with ECAL production module, to electrons and hadrons.

D0 Central Fiber Tracker (2001-2002): Responsible for troubleshooting data acquisition problems in the Visible Light Photon Counter (VLPC) detectors (Fiber Trackers, Preshowers), first in commissioning of Analog Front End boards, later in shift service and on-call expert support.

VLPC Cassette Construction (2000): Performed optical testing and quality control for 128-fiber bundle assemblies for VLPC cassettes (readout for Fiber Tracker and Preshowers).

Awards:
2013 Fermilab LHC Physics Center Distinguished Researcher (senior)

2005 H. A. Wilson Thesis Award for Outstanding thesis in Physics and Astronomy department, Rice University.

2002 Robert L. Chuoke award for Outstanding third year graduate student in Physics, Rice University.

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1999 Outstanding Senior Honor's Thesis: Awarded by the Honor's College of the University of Houston to students for exemplary work in completion of a senior thesis.

1995 National Merit Corporate Sponsored Scholar

My CV: At least in short form, omitting things with LPC ties:

Curriculum Vitae
Andrew W. Askew
askew@hep.fsu.edu

Present Employment: Florida State University
Assistant Professor
CMS Experiment, CERN
D0 Experiment, Fermilab

Academic Training:

2001-2004 Rice University — Ph. D Physics
Thesis: *Measurement of the Wγ→μνγ Cross Section, Limits on Anomalous Trilinear Vector Boson Couplings, and the Radiation Amplitude Zero in $p\bar{p}$ Collisions at $\sqrt{s}$ =1.96 TeV*

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Aug. 2009 – Present Assistant Professor, Florida State University

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V. M. Abazov *et al.* [D0 Collaboration], "Search for resonant WW and WZ production in $p\bar{p}$ collisions at $\sqrt{s}$=1.96 TeV," **Phys. Rev. Lett. 107**, 011801 (2011).

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V. M. Abazov *et al.* [D0 Collaboration], "Measurement of the $p\bar{p} \rightarrow W\gamma + X$ cross section at $\sqrt{s}$ =1.96 TeV and WWγ anomalous coupling limits," **Phys. Rev. D 71**, 091108 (2005).

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Signing all papers on CMS Experiment since 2006.

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1999 Outstanding Senior Honor's Thesis: Awarded by the Honor's College of the University of Houston to students for exemplary work in completion of a senior thesis.

1995 National Merit Corporate Sponsored Scholar