

Curriculum Vitae  
**Andrew W. Askew**  
134 Ivernia Loop  
Tallahassee, FL 32312  
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: <i>Measurement of the <math>W\gamma \rightarrow \mu\nu\gamma</math> Cross Section, Limits on Anomalous Trilinear Vector Boson Couplings, and the Radiation Amplitude Zero in <math>p</math>-<math>\bar{p}</math> Collisions at <math>\sqrt{s}=1.96</math> TeV</i>	
	Advisor: B. Paul Padley	
1999-2001	Rice University	M. S. Physics
	Thesis: <i>A Comparison of Multivariate Data Analysis Techniques as Applied to the Identification of Electrons and Tau Leptons</i>	
	Advisor: B. Paul Padley	
1995-1999	University of Houston	B. S. Physics
	Thesis: <i>An Experimental Study of Longitudinal Polarization in Cosmic Ray Muons</i>	
	Advisor: Kwong Lau	

**Publications (primary authorship only):**

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).

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  $WZ \rightarrow l\nu ll$  Cross Section and Limits on Anomalous Triple Gauge Couplings in  $pp(\bar{p})$  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  $pp(\bar{p})$  Collisions”, **Phys. Rev. Lett.** **104**, 061801 (2010)

V. M. Abazov *et al.* [D0 Collaboration], “Measurement of the electron charge asymmetry in  $pp(\bar{p}) \rightarrow W+X \rightarrow e\nu+X$  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  $W\gamma$  production and limits on anomalous  $WW\gamma$  couplings at  $\sqrt{s}=1.96$  TeV”, **Phys. Rev. Lett.** **100**, 24105 (2008).

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

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

Signing all papers on D0 Experiment since 2002 (complete list attached).

Signing all papers on CMS Experiment since 2006 (complete list attached).

### Conference Talks:

“Electroweak and Hints of New Phenomena at the Tevatron”, Presented at **Physics at the LHC**, June 8<sup>th</sup>, 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**, Jul. 29<sup>th</sup>, 2011. On behalf of the CMS Collaboration.

“Beyond the Standard Model Searches at the Tevatron”, Presented at **Aspen Winter Conference 2011**, February 12-18, 2011. On behalf of the D0 and CDF experiments.

“Hadron Physics at the LHC”, Presented at **Hadron 2009**, Nov. 29- Dec. 4, 2009. On behalf of the CMS, ATLAS and LHCb experiments.

“Status of the CMS Experiment”, presented at the **76<sup>th</sup> annual meeting of the Southeastern Section of the American Physical Society (SESAPS)**, Nov. 13, 2009.

“Recent Electroweak Measurements at the Tevatron”, Presented at the **14<sup>th</sup> Lomonosov Conference on Elementary Particle Physics**, 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**, 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, 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**, 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**, 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**, 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, Aosta Valley, Italy, Mar. 12-19, 2005. On behalf of the D0 and CDF Collaborations.

### **Seminars/Colloquia:**

“Searches for New Physics with the CMS Experiment at the LHC”, a seminar given at the FSU/FAMU College of Engineering, Dec. 2<sup>nd</sup>, 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.

### **Conference Proceedings:**

A. Askew, “Early Hadron Physics at the LHC.” AIP Conf.Proc.1257:205-212, 2010.

A. Askew, “Recent Electroweak Measurements at the Tevatron”, Proceedings of the 14<sup>th</sup> Lomonosov Conference on Elementary Particle Physics, pg. 38-42 2009, A. Studenikin ed.

A. Askew, “Electroweak Measurements (including Dibosons) at the Tevatron”, Proceedings of Les Rencontres de Physique de la Vallée d’Aoste, pg. 245-257 2008, M. Greco ed.

A. Askew, “Electroweak Cross Sections, Asymmetries, and Diboson Results from the Tevatron”, Nucl. Phys. B. Proceedings Supplement vol. 177, pg. 27-32 2007, R. Castaldi *et al.* ed.

A. Askew, “Diboson Cross Sections at  $\sqrt{s}=1.96$  TeV”, Proceedings of the 40<sup>th</sup> Rencontres de Moriond, pg. 173-177 2005, E. Auge and J.T. Thanh Van ed.

A. Askew, H. Miettinen, B. Padley, "Event selection using adaptive Gaussian kernels", *Stanford 2003, Statistical problems in particle physics, astrophysics and cosmology*, pg 154-156.

### **Leadership Experience:**

*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.

*LPC Photon + X Topolgy group convenor* (2009-present): Responsible for organizing and maintaining a group of analyzers at the LHC Physics Center (at Fermilab) devoted to photon related issues.

*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.

### **Analysis Experience:**

Monophoton Analysis (CMS, 2010-Present): Data based analysis strategy (background estimates of both in and out of time processes) for both measuring  $Z\gamma \rightarrow \nu\nu\gamma$  cross section, and searches for large extra spatial dimensions and dark matter.

GMSB Diphoton analysis (CMS, 2008-Present): Monte Carlo studies of data based method for measuring QCD background to diphoton plus missing transverse energy signal (and closure), as well as data based efficiency measurements.

Search for  $W^+ \rightarrow WZ$  and  $WZ \rightarrow ll\nu$  cross section (2009-2010): Background estimates for  $Z+j$  and analysis strategy for  $WZ$  cross section measurement.

$W \rightarrow e\nu$  charge asymmetry (D0, 2007-Present): Measurement of electron charge asymmetry in  $W$  events, measured charge misidentification for electrons across full physics rapidity range ( $|\eta| < 3.2$ ). Defined individual electron types (per tracker acceptance) and selection to reduce misidentification rate.

$W\gamma$  Charge Signed Rapidity difference measurement (D0, 2006-2008): Development of low energy photon identification for both central and forward calorimeter, and description of the performance thereof. Measurement of the final charge-signed rapidity difference, which displays sensitivity to the interference of the production Feynman diagrams.

$WZ$  Analysis (D0, 2006-2007): First three sigma evidence for  $WZ$  production in the trilepton decay channel, presented at Fermilab Joint Experimental-Theoretical Physics Seminar. Using  $Z p_T$  spectrum, set limits on anomalous  $WWZ$  coupling.

$W\gamma/Z\gamma$  Analyses (D0, 2004-2005): Measured efficiencies, acceptance, backgrounds for muon channel of first Run II  $W\gamma$  publication. Involved in systematics, and efficiencies for data based estimation of photon identification efficiency for  $W\gamma$ , and data based photon background estimation for both  $W\gamma$  and  $Z\gamma$  analyses.

$W \rightarrow \mu\nu$  cross section preliminary result (D0, 2003): Calculated backgrounds based on new technique (developed in D0 Note 4000). Also calculated tracking efficiency, muon identification efficiency used in cross section calculation.

### **Algorithm Experience:**

CMS ECAL Anomalous Signals (2009-present): Characterization and mediation of anomalous signals (from neutron interactions) within the CMS electromagnetic calorimeter.

D0 Tracker Offset Characterization (2010-2011): Identification and characterization of curvature (momentum) bias within the D0 central tracking.

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  $\pi^0$  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  $Z\gamma$  and  $W\gamma$  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 system 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.

D0 Multivariate Analysis (2000): Compared studies of optimized neural network and kernel density estimation algorithms for identification of tau leptons and

electromagnetic objects. Formed separate neural networks for different decays of tau leptons.

Developer on FerMA, multivariate analysis suite (2000): Implemented selection algorithms based upon kernel density estimation methods. Developed a modified method which allowed for adaptive kernel widths for better description of discrete multivariate data points.

### **Hardware experience:**

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).

HERA-B RICH detector testing (1998-1999): Tested supermodule M-16 base boards for light tightness, signal continuity and high voltage capacity requirements. Investigated failure modes for surface mounted components in the manufacturing process. Involved in proposed RICH trigger logic and ring identification algorithm testing, as well as hardware testing and repair of level three analysis farm computers (at University of Houston).

Texas Center for Superconductivity Research (1997): Carried out low temperature resistance and Hall effect measurements on high temperature superconductors (or proposed HTS) superconductors. Wrote new data acquisition code for Low Temperature/High Magnetic Field test array.

### **Awards:**

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.

2001 Robert L. Chuoke award for Outstanding second year graduate student in Physics, Rice University.

Department of Energy Delegate to the 51<sup>st</sup> Annual Meeting of the Nobel Laureates:  
Selected as one of 31 U.S. Doctoral students (out of all U. S. Doctoral students supported by DOE grants) to attend the annual meeting of Nobel Laureates in Lindau, Germany.

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.

Graduated Summa Cum Laude with special honors in Physics and membership in the Honor's College, University of Houston.

1995 National Merit Corporate Sponsored Scholar

**Skills:**

Proficient in programming using:

C++

Visual Basic

Verilog (familiarity only)

Speak proficient French.

**Activities/Interests:**

Linux systems

Martial Arts

Home Brewing

Bass guitar