

Martina Hurwitz

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EDUCATION

PhD in Physics (in progress)

University of Chicago, Chicago, IL

Advisors: James Pilcher and Florencia Canelli

Thesis: *Measurement of the $WW + WZ$ production cross section in a semileptonic decay mode at CDF*

Expected graduation: March 2010

M.S. in Physics (2005)

University of Chicago, Chicago, IL

B.S. in Physics (2003)

Massachusetts Institute of Technology, Cambridge, MA

RESEARCH EXPERI- ENCE

CDF detector at the Tevatron

2009-present: Search for diboson processes in semileptonic decay mode. Adapted a matrix element framework used in the search for the Higgs boson to search for WW and WZ events. Carefully studied background modeling and sources of systematic uncertainty. Resulted in the first observation at the Tevatron of diboson events in a final state with two jets and an identified lepton.

ATLAS detector at the LHC

2006-2009: Preparation for a search for quark compositeness in the dijet channel with very early data. Evaluated potential reach of search. Studied use of balance in photon-jet events to validate and establish uncertainty of jet energy scale with data. These photon-jet studies were a significant part of the chapter on *in situ* jet calibration in recent publication on expected ATLAS performance.

2004-2008: Electronics calibration of the ATLAS hadronic tile calorimeter. Developed calibration algorithm that achieves goal of less than 1% channel-to-channel uncertainty and will be used in ATLAS running. Provided calibrations for testbeams and investigated systematic uncertainties associated with calibration.

2005-2006: Quality assurance of commissioning data taken with ATLAS hadronic tile calorimeter. Using cosmic ray muons and calibration triggers, found faulty components in electronics and data acquisition systems. Leader of quality assurance team from January to June 2006.

Braidwood collaboration

2004: Wrote Monte Carlo simulation to estimate background rates due to cosmic ray muons.

ATLAS tracker

February - May 2003 at the Max Planck Institute in Munich, Germany. Wrote software for performing and keeping track of quality assurance of silicon tracking modules.

BLAST experiment

June - December 2002 at Bates Laboratory in Middleton, MA. Built Monte Carlo simulation of Compton polarimeter to be used with BLAST experiment.

AWARDS

Nathan Sugarman Award, 2008 Awarded annually for excellence in graduate research. *For work to study the quark/gluon scattering cross section and angular distribution in a new energy regime.*

Yodh Prize, 2008 Awarded annually for outstanding work in experimental physics.

PRESENTATIONS

Observation of $WW/WZ \rightarrow l\nu jj$ at CDF

Meeting of the Division of Particles and Fields of the American Physical Society, Detroit, 2009.

WW/WZ/ZZ Measurements at the Tevatron

Meeting of the Division of Particles and Fields of the American Physical Society, Detroit, 2009.

Diboson Search in $l\nu jj$

CDF Collaboration Week, Fermilab, 2009.

ATLAS Calorimeter Calibration to the Hadronic Scale

ATLAS Physics Workshop of the Americas, Vancouver, 2008.

Tile Calorimeter: System Construction and Integration

ATLAS Overview Week, Stockholm, 2006.

Calorimeter Response to Hadrons in Combined Testbeam

North American ATLAS Physics Workshop, Tucson, 2004.

- PUBLICATIONS CDF collaboration, *Measurement of the $WW+WZ$ Production Cross Section Using the Lepton+Jets Final State*. Submitted to Phys. Rev. Lett. (2010).
- P. Adragna *et al.*, *Study of the response of the ATLAS central calorimeter to pions of energies from 3 to 9 GeV*, Nucl. Instrum. Meth. **A607**, 372 (2009).
- P. Adragna *et al.*, *Testbeam studies of production modules of the ATLAS Tile Calorimeter*, Nucl. Instrum. Meth. **A606**, 362 (2009).
- ATLAS collaboration, *Expected Performance of the ATLAS Experiment - Detector, Trigger, and Physics*. Contributions to section on *in situ* jet energy scale calibration, arXiv:0901.0512; CERN-OPEN-2008-020 (2008).
- CONFERENCE M. Hurwitz, *Observation of Diboson Production in a Semileptonic Decay at CDF* DPF-2009 conference proceedings, arXiv:0910.3549 (2009).
- PROCEED- M. Hurwitz, *Diboson Measurements at the Tevatron* DPF-2009 conference proceedings, arXiv:0910.3550 (2009).
- INGS M. Hurwitz, *Performance of ATLAS Tile Calorimeter Production Modules in Calibration Testbeams*. Conference proceedings, Nucl. Instrum. Meth. **A572**, 80 (2006).
- INTERNAL M. Hurwitz *et al.*, *Measurement of $WW + WZ$ production cross section in $l\nu jj$ channel using 4.6 fb^{-1}* . CDF internal note number 9923 (2009).
- NOTES B. Alvarez *et al.*, *Search for Standard Model Higgs Boson Production using Matrix Elements with 4.3 fb^{-1}* . CDF internal note number 9861 (2009).
- M. Hurwitz *et al.*, *Measurement of the WW and WZ production cross section in $l\nu jj$ using 2.7 fb^{-1} of data*. CDF internal note number 9798 (2009).
- M. Hurwitz, *Understanding the jet energy scale using photon-jet balancing*. ATLAS internal note, ATL-COM-PHYS-20090046 (2009).
- K. J. Anderson, M. Hurwitz, I. Jen-La Plante, J. E. Pilcher, R. Teuscher, *Performance and calibration of the TileCal fast readout using the charge injection system*. ATLAS internal note, ATL-COM-TILECAL-2008-003 (2008).
- M. Hurwitz, *Module-to-module uniformity at 180 GeV in 2002-2003 Tile-Cal calibration test beams*. ATLAS note, ATL-COM-TILECAL-2006-011 (2006).