

September 28, 2009.

Evelyn Jean Thomson

Professional Experience

Assistant Professor of Physics, University of Pennsylvania, 2004-present.
Postdoctoral Fellow, The Ohio State University, 1999-2004.
Particle Physics and Astronomy Research Council Fellow, 1999.

Education

Ph.D. Experimental Particle Physics, University of Glasgow, 1998,
“Measurements of the W boson mass from semileptonic WW events with the ALEPH detector.”
B.Sc.(Hons) First Class, Physics, University of Glasgow, 1995.

Awards

Alfred P. Sloan Foundation Research Fellowship, 2006.
Outstanding Junior Investigator Award, Department of Energy, United States of America, 2005.
Particle Physics and Astronomy Research Council Fellow, United Kingdom, 1999.
Caledonian Research Foundation Scholarship, Carnegie Trust for The Universities of Scotland, 1995-1998.
Thomson Experimental Physics Prize - University of Glasgow, 1997.
Ede & Ravenscroft Prize - Faculty of Science, University of Glasgow, 1995.
Archibald-M^cAulay Memorial Prize, Michael Faraday Medal - Physics, 1995.
C. E. Strachan Will Trust Scholarship - Faculty of Science, 1994.
Lang Scholarship, Thomson Experimental Prize - Physics, 1994.
Ford-Forrest Bursary, Lanfine Bursary, Michael Faraday Medal - Physics, 1993.
Ford-Forrest Bursary - Mathematics, 1993.
George Roger Muirhead Prize, Joseph Black Medal - Chemistry, 1992.
Academic dux, Larbert High School, 1990.

Grants

Outstanding Junior Investigator Award, Department of Energy, United States of America, 2005-present.
\$75,000 per annum.
Alfred P. Sloan Foundation Research Fellowship, 2006. \$45,000.

Research group at Penn

Dr. Aafke Kraan (Jan. 2005-Sep. 2006, Marie Curie European Union fellowship at INFN Pisa in Italy).
Dr. Chris Neu (Sep. 2006-Jul. 2008, tenure-track assistant professorship at the University of Virginia).
Dr. James Degenhardt (Jul. 2007-present).
Dr. Saša Fratina (Aug. 2007-present).
Mr. Dominick Olivito (Sep. 2006-present).
Ms. Elizabeth Hines (Sep. 2007-present).
Mr. Justin Keung (Apr. 2008-present).

Research Accomplishments

Evelyn Thomson has performed experiments at e^+e^- and hadron colliders at the leading particle physics laboratories around the world. Her research interests include precision measurements of the W boson mass at ALEPH, precision measurements of top quark properties and searches for the Higgs boson at CDF, and searches for physics beyond the standard model at ATLAS.

In 1995, she started her career in experimental particle physics at the University of Glasgow as a graduate student on the ALEPH collaboration at the CERN LEP collider near Geneva, Switzerland. For her Ph.D. thesis, she worked on the first measurements of the W boson mass by direct reconstruction of W decay products in the $e^+e^- \rightarrow W^+W^- \rightarrow \ell\nu q\bar{q}$ channel. In 1998, she won a Particle Physics and Astronomy Research Council Fellowship and studied the dominant systematic uncertainties on the W boson mass measurement from final state interactions in the $e^+e^- \rightarrow W^+W^- \rightarrow q\bar{q}q\bar{q}$ channel.

In 1999, she joined the CDF collaboration as a postdoctoral fellow with the Ohio State University. Based at Fermi National Accelerator Laboratory near Chicago, U.S.A, she successfully commissioned the extremely fast track (XFT) processor. The XFT makes extensive use of parallel processing and pipelining in Programmable Logic Devices to reconstruct charged-particle tracks in time for the first-level trigger in every $p\bar{p}$ collision - a first at a hadron collider. At the heart of the CDF trigger system, which picks out interesting events from the one million seven hundred thousand collisions of protons and anti-protons per second, the XFT is essential for the Top, Exotic, Electroweak and B physics programs at CDF.

Intrigued by the opportunity of an order of magnitude increase in statistics for measurements of the properties of the top quark and by the potential to find physics beyond the standard model in the properties of the most massive fundamental particle, Evelyn Thomson's main research interest on CDF is the physics of the top quark. She developed and supported a versatile analysis package still used by most physics analyses in the CDF Top Quark Physics Group. She worked on the measurement of the top-quark pair-production cross section from event kinematics in the $t\bar{t} \rightarrow \ell\nu q\bar{q}b\bar{b}$ channel using an advanced multivariate technique. She was selected by the CDF collaboration for a two-year term, beginning April 2004, as co-leader of the CDF Top Quark Physics Group. During the next two years, she was responsible for directing the efforts of the group and approving results for conferences and publications. The most significant result was the then-world's-best-measurement of the top-quark mass, a quantity of fundamental importance in the standard model and beyond.

Professor Thomson moved to the University of Pennsylvania in July 2004, where she has continued her research as a member of the CDF collaboration on top-quark physics. In recognition of her research on CDF, Thomson was named an **Outstanding Junior Investigator** by the U.S. Department of Energy in 2005 and an **Alfred P. Sloan Research Fellow** in 2006. Her current interests on CDF are studies of $W + b$ -jet production and improved b -jet identification, both of which are important to the search for the standard model Higgs boson. Since joining the ATLAS collaboration in 2007, the commissioning of the ATLAS detector at the CERN LHC has been - and remains - a priority of Professor Thomson's research on ATLAS. With analysis of data from cosmic-ray muons passing through the ATLAS transition radiation tracker, we have contributed significantly to the commissioning of the ATLAS transition radiation tracker (TRT). This is valuable to prepare the ATLAS detector for the first proton-proton collision data, now expected in a year-long run starting in November 2009, and to contribute to the first physics analyses. With the recent problems in LHC operation, which mean that the first run over the next year will be at a reduced collision energy and will accumulate a relatively small amount of integrated luminosity, she has adjusted her plans to the more appropriate goals of contributing in an original manner with measurements of $Z+\gamma$ and $W+b$ -jets production. In future research with ATLAS data, her group will apply its high p_T physics analysis experience and good understanding of the ATLAS detector to direct searches for physics beyond the standard model.

The following presents the most significant activities of her research on the ATLAS, CDF, and ALEPH experiments:

- Study of the performance of the ATLAS TRT detector with Dr. Fratina. Dr. Fratina's expertise is reflected in her appointment as the TRT software coordinator for the next year of ATLAS start-up. Calibration of the detector with data from cosmic-ray muons as well as September 2008's proton beam splash. Achieved 24-hour turn-around for calibrations. A level-2 trigger using TRT information was successfully developed especially for cosmic-ray muons in order to increase efficiency of data collection. Detailed studies of signals from the TRT are in progress to achieve the design position resolution of $130 \mu\text{m}$.
- Development of ATLAS TRT data-quality monitoring software with Dr. Degenhardt. This allows diagnosis of hardware problems that occur during data-taking in real-time, so that they can be quickly fixed without unnecessary loss of data, and also to validate the later reconstruction of the data, to ensure good-quality data for physics analysis. The software is operational in the ATLAS control room and at the ATLAS Tier-0 reconstruction computing facility.
- Operation of the ATLAS TRT detector with Dr. Degenhardt and Mr. Olivito. Dr. Degenhardt's operational and leadership skills are reflected in his appointment as the TRT deputy run coordinator for the next year of ATLAS start-up. Mr. Olivito is the on-call expert for the front-end and read-out electronics of the TRT. The responsibilities include: commissioning of both front-end and back-end electronics on a daily basis in the ATLAS control room, which involves debugging any readout problems that appear; preparing the detector for data-taking periods; testing of the operation of 96 readout drivers, which receive the data from the 4,224 front-end electronics printed circuit boards and assemble it into a format for the ATLAS trigger and data acquisition system; and development of additional functionality for the data acquisition system, including procedures to exclude individual boards with problems during data-taking without stopping the overall ATLAS run.
- ATLAS inner-detector trigger operation with Dr. Degenhardt and Ms. Hines. Validation of level-2 trigger algorithm for charged particle reconstruction in collisions with TRT is in progress with simulation. In training to become on-call experts for inner-detector trigger during first year of data-taking.
- ATLAS electron identification studies with graduate student Ms. Hines. The optimal use of information from the transition radiation tracker is being studied.
- Search with Mr. Keung for WZ production at CDF (thesis topic, expected Spring 2010). Goal is observation of the standard model $WZ \rightarrow \ell\nu b\bar{b}$ process as a standard candle to validate the closely related WH search.
- Calibration with Mr. Keung of efficiency and false-positive rate for an advanced b -jet identification algorithm at CDF, developed by collaborators at INFN Roma. First application to the search for the Higgs boson in the $WH \rightarrow \ell\nu b\bar{b}$ resulted in 20% extra efficiency in best search channel with both b -jets identified. Preliminary result with 4300 pb^{-1} of CDF data shown at the Lepton-Photon conference in August 2009. This research will benefit all searches for a Higgs boson that decays to $b\bar{b}$.

- Combination of CDF top-quark pair-production cross section measurements, most recently updated for results with up to 4600 pb^{-1} and shown at the Lepton-Photon conference in August 2009. Combined result is $7.50 \pm 0.48 \text{ pb}$, which is a 20% improvement on the best single measurement from CDF alone. Combination makes optimal use of information from analyses using different techniques ranging from fitting event observables to counting secondary vertex b -tags.
- Measurement with Dr. Neu of the rate of b -jet production in association with a W boson. This is an important test of the model of the dominant background assumed by the high-profile searches for the standard model Higgs boson at CDF. The result is $2.74 \pm 0.27 \text{ (stat)} \pm 0.42 \text{ (syst)} \text{ pb}$ with 1900 pb^{-1} of CDF data (see **publication [1]**). An expansion on the original measurement to differential cross sections is in progress and is of great interest, as the measured total rate is a factor of two higher than recent theoretical predictions at next-to-leading order in α_s . The keystone of this measurement is Dr. Neu's development of a higher-purity operating point of the CDF b -jet identification algorithm. Jets consistent with originating from the decay of long-lived hadrons are selected through the identification of a secondary decay vertex significantly displaced from the primary $p\bar{p}$ interaction point. The invariant mass of the charged-particle tracks associated with the secondary vertex is sensitive to the flavor of the decaying hadron and is used to determine the fraction of selected jets that are from b -quark production.
- Co-author in the 2008 **Annual Review of Nuclear and Particle Science**, with Professor R. Demina (Rochester). Invited review of recent experimental results on top-quark properties and interactions (see **publication [2]**).
- Search with Dr. Kraan for right-handed W boson polarization in top-quark decay, which is forbidden in the standard model but could be allowed by physics beyond the standard model. Technique exploits the relationship between the invariant mass of a charged lepton and a b -jet and the helicity of the W boson. This enables the use of both dilepton and lepton+jets final states from $t\bar{t}$ production. Result with approximately 700 pb^{-1} is published in Phys. Rev. Lett. (see **publication [3]**), and sets an upper limit on the fraction of right-handed polarized W bosons of 0.09 at 95% confidence level. This is a factor of two improvement over previous direct limits.
- **CDF Top Quark Physics Group co-leader: April 2004 - April 2006.** Led the Top Quark Physics Group in data analysis of top-quark properties and scientific review of publications. During this time, the group produced twenty-one publications (see **publications [4]-[24]**), including eight in Physical Review Letters, and had about 100 active researchers, including over fifty graduate students from universities in the United States and abroad. Six physics groups coordinate the efforts of the CDF collaboration of more than 600 physicists from 62 institutions in 14 countries. Two physicists are selected by the collaboration to lead each physics group for two years.
- Coordination of the overall CDF calibrations in 2005 with Dr. Kraan. This work reduced the delay between acquiring data and completing the final reconstruction for physics analysis from six months to six weeks. This was critical for timely release of many important measurements limited by statistics, including B_s mixing and top quark properties. Dr. Kraan was the first calibration coordinator on CDF. Dr. Kraan produced the calibration samples in a user-friendly format to insulate the calibration experts from ephemeral details of the CDF offline computing environment, set and enforced the deadline for calibrations, and produced validation samples to verify that the calibrations had been correctly implemented in the CDF reconstruction framework.

- Measurement of top-quark pair-production cross section with an original advanced multivariate technique that combines information from several kinematic event observables. Result with 195 pb^{-1} published in Phys. Rev. D is $\sigma(p\bar{p} \rightarrow t\bar{t}) = 6.6 \pm 1.1 \text{ (stat)} \pm 1.4 \text{ (syst)} \pm 0.4 \text{ (lum)} \text{ pb}$ (see **publication** [17]). This measurement employed characteristic kinematics of events with top-quark decays to statistically separate them from backgrounds and has about 50% higher signal efficiency than the traditional b -tag technique, as well as being independent of the systematic uncertainties associated with b -tagging and estimation of b -tagged backgrounds. Started with a single kinematic variable, then developed an artificial neural network technique to improve the discrimination between signal and background, and reduce the uncertainty on the cross section measurement by 30%.
- Combination of CDF and DØ measurements of the top-quark mass for HEP 2005 International Europhysics Conference on High Energy Physics, giving a 30% improvement on the previous best single measurement from CDF alone. Led Tevatron working group meetings to understand correlated systematic uncertainties and facilitated communication between CDF and DØ (see **publications** [37, 38, 39]).
- **CDF Top Quark Physics “lepton plus jets” working group co-leader: November 2002 to February 2004.** Four sub-groups of the Top Quark Physics Group further the study of the two distinctive final states associated with top, dilepton and lepton plus jets, and of two important topics, top-quark mass and b -tagging. Two physicists are selected to lead these groups for a one year term. I led and coordinated a group of about 80 faculty, postdoctoral fellows and graduate students in the study of events with a high-transverse-momentum lepton, missing transverse energy and jets: the characteristic signature for $t\bar{t}$ pair-production, where $p\bar{p} \rightarrow t\bar{t} \rightarrow WWb\bar{b} \rightarrow \ell\nu q\bar{q}b\bar{b}$ with a large branching fraction of 44%. Analyses in scope include measurement of top-quark pair-production cross section, search for single top-quark production and measurement of W helicity. Also led the group to actively work with theorists to test and improve models of signal and background processes.
- Created standard, official data samples used for all Top, Electroweak and some Exotic physics results for winter and summer conferences in 2003 and winter conferences in 2004. Designed and developed the C++ tool accepted by analysis groups as official software.
- Developed a software package for the Top Quark Physics Group to standardize the data analysis effort (TopNtuple). Used by 90% of Top Quark Physics group analyses. Assisted several other collaborators to add information pertinent to their analyses, including top-quark mass reconstruction and new b -tag algorithms.
- Responsible for the successful commissioning and installation of the extremely fast track (XFT) processor in the CDF Level 1 trigger. The XFT is needed to identify both high-momentum leptons for Top, Electroweak and Exotic physics, and low-momentum charged particles for B physics. The XFT is pipelined, and extensive use is made of parallel processing with Programmable Logic Devices (see **publication** [31]). Designed and conducted diagnostic tests to check: performance of track-finding algorithms implemented in XFT electronic chips; data transmission within and between XFT modules in both test-stands and *in situ* with the real CDF trigger and clock signals; data connections between XFT and neighboring systems in the trigger from other CDF institutions.
- 24 hour on-call for CDF XFT system. Data-taking shifts including shift leader.

- **Particle Physics and Astronomy Research Council Postdoctoral Fellowship.** Improved estimation of dominant systematic uncertainty on W boson mass measurement for ALEPH experiment at CERN LEP collider (see **publication [26]**). Studied different phenomenological models for effects of color reconnection and Bose-Einstein correlations, which are interactions between decay products of different W bosons in $e^+e^- \rightarrow W^+W^- \rightarrow q\bar{q}q\bar{q}$ events.
- Performed first measurement of W boson mass by direct reconstruction of W decay products in $e^+e^- \rightarrow W^+W^- \rightarrow \ell\nu q\bar{q}$ events (where $\ell = e$ or μ), using 1996 and 1997 ALEPH data at CERN LEP collider (see **publications [27] and [28]**). Result is W boson mass = $80.422 \pm 0.181(stat.) \pm 0.040(syst.)$ GeV/c².
- Developed very efficient and pure event selection, kinematic fit to improve resolution on the event-by-event reconstructed W boson mass by a factor of four, matrix element reweighting technique in a maximum likelihood fit to extract W boson mass in an unbiased way. Performed checks on stability of fit result and evaluated several systematic uncertainties.
- 24 hour on-call for ALEPH Inner Tracking Chamber. Data-taking shifts including shift leader.
- 24 hour on-call for ALEPH Time Projection Chamber, maintained drift velocity laser calibration system. Data-taking shifts as data-quality coordinator.

Professional and Service Activities

Co-leader of CDF Top Quark Physics Group, 2004-2006.

Co-leader of CDF Top Lepton+Jets Working Group, 2002-2004.

ATLAS US speakers committee, September 2009-present.

ATLAS internal note review, August 2009, single top-quark production.

Chair of CDF paper review committee, March 2009-present, W boson helicity.

CDF paper review committee, April 2009-present, top-quark mass in all-hadronic channel.

CDF paper review committee, December 2003-2004, top-quark production rate in dilepton channel.

Chair of CDF review committee for Run IIb XFT upgrade, 2004-2006.

Local organizer of high transverse momentum physics parallel sessions at ICHEP, July 2008.

Co-organizer of Top, Higgs, W & Z Physics parallel session at Joint Meeting of Pacific Region Particle Physics Communities, October 2006.

Reviewer for Department of Energy Outstanding Junior Investigator program, 2007.

Reviewer for *Nature*, 2003-2004.

Student Involvement in Research

I am supervising the research of three Penn graduate students: Mr. Justin Keung (2005) on CDF, Mr. Dominick Olivito (2006) and Ms. Liz Hines (2007) on ATLAS. As co-leader of the CDF Top Quark Physics Group and the Lepton plus Jets working group, I have assisted many graduate students from other CDF institutions. At Ohio State University, I helped to direct research of five graduate students. I worked most closely with Mr. Radu Marginean (postdoctoral fellow at Fermi National Accelerator Laboratory), on a measurement of the top-quark pair-production cross section using artificial neural networks.

Undergraduate Instruction

I have taught introductory physics classes on Classical Mechanics (Physics 140/150) and Electricity and

Magnetism (Physics 141/151). These classes are calculus-based, and the students are from both the College of Arts and Sciences and the School of Engineering and Applied Sciences.

Course	Semester	Students	Instructor Quality (4 maximum)
Physics 150	Fall 2009	75	-
Physics 140	Fall 2009	31	-
Physics 151	Spring 2009	87	3.42
Physics 141	Spring 2009	35	3.27
Physics 150	Fall 2008	60	3.54
Physics 140	Fall 2008	20	3.59
Physics 151	Spring 2008	37	3.52
Physics 141	Spring 2008	14	3.80
Physics 151	Spring 2007	16	3.22
Physics 141	Spring 2007	4	3.00
Physics 150	Fall 2006	54	2.43
Physics 140	Fall 2006	25	2.10
Physics 151	Spring 2006	26	2.57
Physics 141	Spring 2006	8	3.40
Physics 150	Fall 2005	57	2.39
Physics 140	Fall 2005	25	2.16
Physics 151	Spring 2005	42	1.12

- Physics 295 Benjamin Franklin Seminars, Introduction to Research in Physics and Astronomy, Spring 2005. Course run by Professor Paul Heiney. I gave 3 lectures to about 20 students.
- Tours of CDF experiment for undergraduate students from Ohio State University in 2002 and 2003.
- Teaching assistant in University of Glasgow Nuclear and Atomic Physics laboratory for 3rd year undergraduate students 1995 through 1997: experiments included scintillation counters, Neutron lifetime and Caesium Optical Pumping.

Activities at University of Pennsylvania

Graduate Admissions Committee, Department of Physics and Astronomy, 2004-2005, 2005-2006, 2007-2008, 2008-2009. Reviewed applications and led recruitment of 17 graduate students to date for the seven faculty in experimental particle physics at Penn. This was particularly critical as only four graduate students had been successfully recruited for experimental particle physics during the four years prior to my arrival at Penn.

- Mr. Justin Keung (Thomson, Lockyer), Ms. Elisabetta Pianori (Lockyer), Ms. Anna Grassellino (Lockyer) recruited for September 2005 incoming class.
- Mr. John Alison (Kroll), Mr. Dominick Olivito (Thomson), Mr. Ryan Reece (Williams) recruited for September 2006 incoming class.
- Mr. Richie Bonventre (Klein), Mr. Brett Jackson, Mr. Chris Lester, Mr. Jon Stahlman recruited for September 2008 incoming class.

- Mr. Thomas Caldwell, Mr. Joseph Clampitt, Mr. Matt Malloy, Mr. Andy Mastbaum, Mr. John Qi, Mr. Doug Schaefer, Mr. Rami Vanguri recruited for September 2009 incoming class.
- Faculty Search Committee for Experimental Particle Physics 2007-2008. Reviewed applications, interviewed candidates, helped to recruit top candidate (Elliot Lipeles) to Penn.
- Experimental Particle Physics Seminar series, organizer 2005-present. Invite speakers to Penn. Canvas rest of particle physics group for suggestions for speakers. Contributes to good learning environment for graduate students. Seminars normally occur every two weeks during academic year. Slides archived on web-site
<http://dept.physics.upenn.edu/~thomson/hepseminars/schedule.html>
- Graduate thesis committee member for Penn Physics & Astronomy graduate students Andre Brown (2009), Tsz Yan Lam (2009), Yan-Jun Tu (2008), and Rutgers University graduate student Jared Yamaoka (2007).
- 60-second lecture, Penn School of Arts and Sciences, April 1 2009:
http://media.sas.upenn.edu/embed_real.php?x=sas_exaff/60sec/thomson.rm
- Fund to Encourage Women event, panel member, “Female Scientists in Academia”, March 2009.
- Presentation at launch of Center for Particle Cosmology, February 24 2009.
- Penn Physics club presentation, November 2008.
- Discussion leader, Freshmen Penn Reading Project, September 2008, 2006, 2005.
- Penn Proseminar, New Student Orientation 2008.
- Penn Career Services, panel member, “Preparing for/Making the Most of Your First Year in a New Faculty Position”, April 2006.
- Colloquium Committee, Department of Physics and Astronomy, 2005-2006.

Conference Presentations

Note that since 2006, I have deliberately encouraged members of my group to present our work at major international conferences in order to help further their careers.

- *Measurement of b -jet production in association with a W boson*, Northwest Terascale Research Workshop on $W + b$ -quark physics at the LHC, University of Oregon, September 2009.
- Dr. Degenhardt: *Commissioning of the Inner Detector*, ATLAS Physics Workshop of the Americas, New York University, New York, August 2009.
- *Commissioning of the Transition Radiation Tracker*, ATLAS Physics Workshop of the Americas, Simon Fraser University, Canada, June 2008.
- Dr. Neu: *Experimental studies of W/Z +jets and W/Z +Heavy Flavor at the Tevatron*, Hadron Collider Physics, Galena, Illinois, May 2008.

- Dr. Neu: *W/Z+Jets and W/Z+heavy flavor production at the Tevatron*, Moriond QCD, Italy, March 2008.
- Dr. Kraan: *Measurements of W helicity in top quark decays at CDF*, CERN EP seminar, Geneva, Switzerland, December 2006.
- Dr. Kraan: *Measurements of top quark properties at CDF*, ICHEP, Moscow, Russia, July 2006.
- *Combination of CDF measurements of top quark pair production rate*, Joint Meeting of Pacific Region Particle Physics Communities, Honolulu, Hawaii, October 2006.
- *Experimental Methods in top quark physics*, invited plenary talk at Top Quark 2006, Coimbra, Portugal, January 2006.
- *Top quark Physics*, invited plenary talk at XVII Particles and Nuclei International Conference, Santa Fe, New Mexico, October 2005.
- *Electroweak and top quark physics*, invited plenary talk at American Physical Society Division of Particles and Fields annual meeting (DPF2004), University of California at Riverside, California, August 2004.
- *Recent Physics Results from CDF and DØ*, invited talk at topical conference at the 31st SLAC Summer Institute on Particle Physics: Cosmic Connection to Particle Physics (SSI 2003), Menlo Park, California, August 2003. Streaming video available from http://www-project.slac.stanford.edu/streaming-media/SSI/2003/ram/SSI_8_7am3.ram
- *Online Track Processor for the CDF Upgrade*, invited talk at IEEE Nuclear Science Symposium, San Diego, November 2001.
- *New results on interference effects and correlations*, invited talk at International Europhysics Conference on High-Energy Physics (EPS-HEP 99), Tampere, Finland, July 1999.

Colloquia

- University of California, Santa Cruz, May 2009.
- MIT Laboratory of Nuclear Science, April 2009.
- Villanova University, November 2008.
- Drexel University, October 2008.
- Bryn Mawr College, March 2008.
- Johns Hopkins University, October 2006.
- University of Maryland, April 2006.
- University of Kentucky, November 2004.

Seminars

- University of Toronto, October 2009.
- University of California, San Diego, May 2009.
- Harvard University, April 2009.
- University of Washington, January 2006.
- California Institute of Technology, March 2004.
- University of California at Davis, March 2004.
- Fermi National Accelerator Laboratory, March 2004, September 1999.
- Ohio State University, February 2004, September 1999.
- University of Pennsylvania, February 2004, April 2003.
- Michigan State University, November 2003, September 1999.
- Brookhaven National Laboratory, September 1999.
- Boston University, September 1999.
- Purdue University, September 1999.
- Lawrence Berkeley National Laboratory, May 1999.

Schools

SLAC Summer Institute, “Cosmic Connections”, July 2003.

CERN-JINR European School of High-Energy Physics, May 1997, Denmark. Poster: “Measuring M_W ”.

RAL School for Young High-Energy Physicists, September 1996, United Kingdom.

Secondary education: Larbert High School, Larbert, Stirlingshire, UK. August 1985 to May 1991.

3 Certificates of Sixth Year Studies in Chemistry (A), Physics (B) and Mathematics II (B).

7 Highers in Biology (A), Chemistry (A), English (A), Geography (A), Latin (B), Mathematics (A) and Physics (A).

8 O-grades in Arithmetic (1), Chemistry (1), English (1), French (2), Geography (1), Latin (1), Mathematics (1) and Physics (1).

Publications in Refereed Journals

I have listed publications where I was one of the principal authors (**P**) or I made important contributions (**I**). A full list of ALEPH, CDF, and ATLAS publications where I am listed as an author is available on request.

References

- [1] (**P**) *Measurement of the b -jet production cross section in events with a W boson in $p\bar{p}$ collisions at $\sqrt{s} = 1.96$ TeV*, The CDF Collaboration, T. Aaltonen *et al.*, submitted to Phys. Rev. Lett. (2009), arXiv.0909.1505, 7 pages.
- [2] (**P**) *Top quark properties and interactions*, E. J. Thomson and R. Demina, Annual Review of Nuclear and Particle Science, Vol. 58: 125-146 (2008).
- [3] (**P**) *Search for $V + A$ current in top quark decay in $p\bar{p}$ collisions at $\sqrt{s} = 1.96$ TeV*, The CDF Collaboration, A. Abulencia *et al.*, Phys. Rev. Lett. **98**, 072001 (2007), 7 pages.
- [4] (**I**) *Measurement of the $t\bar{t}$ production cross section in $p\bar{p}$ collisions at $\sqrt{s} = 1.96$ TeV using lepton + jets events with jet probability b -tagging*, The CDF Collaboration, A. Abulencia *et al.*, Phys. Rev. D**74**, 072006 (2006), 38 pages.
- [5] (**I**) *Measurement of the $t\bar{t}$ production cross section in $p\bar{p}$ collisions at $\sqrt{s} = 1.96$ TeV in the all hadronic decay mode*, The CDF Collaboration, A. Abulencia *et al.*, Phys. Rev. D**74**, 072005 (2006), 9 pages.
- [6] (**I**) *Measurement of the $t\bar{t}$ production cross section in $p\bar{p}$ collisions at $\sqrt{s} = 1.96$ TeV*, The CDF Collaboration, A. Abulencia *et al.*, Phys. Rev. Lett. **97**, 082004 (2006), 7 pages.
- [7] (**I**) *Measurement of the $t\bar{t}$ production cross section in $p\bar{p}$ collisions at $\sqrt{s} = 1.96$ TeV using missing E_T + jets events with secondary vertex b -tagging*, The CDF Collaboration, A. Abulencia *et al.*, Phys. Rev. Lett. **96**, 202002 (2006), 7 pages.
- [8] (**I**) *Measurement of the top quark mass using template methods on dilepton events in $p\bar{p}$ collisions at $\sqrt{s} = 1.96$ TeV*, The CDF Collaboration, A. Abulencia *et al.*, Phys. Rev. D **73**, 112006 (2006), 23 pages.
- [9] (**I**) *Measurement of the top quark mass with the dynamical likelihood method using lepton plus jets events with b -tags in $p\bar{p}$ collisions at $\sqrt{s} = 1.96$ TeV*, The CDF Collaboration, A. Abulencia *et al.*, Phys. Rev. D **73**, 092002 (2006), 26 pages.
- [10] (**I**) *Search for anomalous semileptonic decay of heavy flavor hadrons produced in association with a W boson at CDF II*, The CDF Collaboration, A. Abulencia *et al.*, Phys. Rev. D **73**, 051101 (2006), 8 pages.
- [11] (**I**) *Top quark mass measurement from dilepton events at CDF II*, The CDF Collaboration, A. Abulencia *et al.*, Phys. Rev. Lett. **96**, 152002 (2006), 7 pages.

- [12] **(I)** *Measurement of the helicity of W bosons in top quark decays*, The CDF Collaboration, A. Abulencia *et al.*, Phys. Rev. D **73**, 111103 (2006), 7 pages.
- [13] **(I)** *Top quark mass measurement using the template method in the lepton + jets channel at CDF II*, The CDF Collaboration, A. Abulencia *et al.*, Phys. Rev. D **73**, 032003 (2006), 35 pages.
- [14] **(I)** *Precision top quark mass measurement in the lepton + jets topology in $p\bar{p}$ collisions at $\sqrt{s} = 1.96$ TeV*, The CDF Collaboration, A. Abulencia *et al.*, Phys. Rev. Lett. **96**, 022004 (2006), 7 pages.
- [15] **(I)** *A search for $t \rightarrow \tau\nu q$ in $t\bar{t}$ production*, The CDF Collaboration, A. Abulencia *et al.*, Phys. Lett. B **639**, 172 (2006), 7 pages.
- [16] **(I)** *Search for charged Higgs bosons from top quark decays in $p\bar{p}$ collisions at $\sqrt{s} = 1.96$ TeV*, The CDF Collaboration, A. Abulencia *et al.*, Phys. Rev. Lett. **96**, 042003 (2006), 7 pages.
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