

# CURRICULUM VITAE

**William C. Wester, III**  
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## Education:

- Ph.D. University of California at Berkeley, Berkeley, CA. (Physics, April 1994)
- M.A. University of California at Berkeley, Berkeley, CA. (Physics, May 1989)
- B.S. Xavier University, Cincinnati, OH. (Physics and Mathematics, June 1987)  
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## Positions:

- 2003– Scientist I, Fermi National Accelerator Laboratory.
- 1998-2003 Associate Scientist Fermi National Laboratory.
- 1994-1997 Postdoctoral Research Associate, Fermi National Laboratory.
- 1994-1994 Postdoctoral Research Associate, Lawrence Berkeley Laboratory.
- 1988-1994 Graduate Student Research Assistant, Lawrence Berkeley Laboratory.
- 1987-1988 Teaching Assistant, University of California at Berkeley.
- 1985-1986 Summer Student Research Assistant, University of Tennessee, Knoxville.

## Research Experience:

- 1998– Member of the CDF Collaboration  

Run II data analysis, silicon hardware including a Run IIb proposal to put pixels into CDF and DØ, B physics subgroup convener, and shift duties. I have served on Godparent committees that have lead to 7 publications. My main area of research in Run II has been the  $B_c^- \rightarrow J/\psi \pi^-$  channel where I have been the lead analyzer that produced the first observation of the decay and the measurement of the mass of the  $B_c^-$  meson. I continue to work towards extracting the  $B_c^-$  lifetime and relative production properties.
- 2003 – Member of the Dark Energy Survey Collaboration  

Founding member of DES and responsible for the aluminum nitride circuit board used in CCD packaging. Currently, I work on coordinating online software data acquisition activities associated with the multi-CCD test vessel.
- 2007– Co-spokesperson and Project Manager of the GammeV Collaboration  

Responsible for the proposal, design, safety reviews, installation, and other duties as the co-leader of the experiment. I was the primary analyzer of the data that produced the limits on axion-like particles. Maintained [gammev.fnal.gov](http://gammev.fnal.gov) web site. R&D for future experiments on axions and holographic noise utilizing optical techniques.

- 2003– Member of the Supernova Acceleration Probe (SNAP) Collaboration  
Responsible for the study of mass memory for the mission including radiation studies of commercial flash memories and other warm electronics design.
- 1998-2009 Group Leader for ASIC Testing in the Electrical Engineering Department  
I have led Application Specific Integrated Circuit testing activities at Fermilab after being responsible for the acquisition of a semi-automatic probe station and building a laboratory for ASIC testing. ASIC testing was performed for devices used by CDF, DØ, CMS, MINOS, Minerva, Phenix, SNAP, BTeV, and ILC R&D. I have been involved in radiation and other studies that support ASIC development at Fermilab. I have supervised three Ph.D. engineers/engineering physicists and two technicians - all of whom received promotions under my supervision. I have coordinated various ASIC post-processing activities including backgrinding, dicing, and packaging.
- 1998-2000 Collaborator on the APEX (E-868) Experiment  
Responsible for the analysis of antiproton decays into electron channels. This work is complete and is contained in publications.
- 1994-1997 Postdoctoral research at Fermi National Accelerator Laboratory.  
Responsibilities on CDF include manufacturing wire planes for the Run II central outer tracking chamber (COT). Chaired a committee evaluating cost and schedule for different Run II tracking options. Responsibilities on APEX include construction of the central support structure and testing of scintillation chambers and data analysis.
- 1991-1994 Analyzed CDF data Ph.D. Thesis: “A Measurement of the Mass of the  $B_s^0$  Meson in  $\bar{p}p$  Collisions at  $\sqrt{s} = 1.8$  TeV.” Advisor: Prof. Marjorie D. Shapiro
- 1989-1992 Responsible for R&D, production, and testing of the SVX port card.
- 1992 Responsible for electronics that were part of the SVX cooling system.
- 1990 Shared responsibility for the operation of a SVX module at the CDF testbeam.
- 1988-1989 Responsible for the wafer scale testing of the SVX chips.
- 1985-1986 Analyzed bubble chamber data. Supervisor: Dr. James E. Brau

### Professional Activities:

- Life member of the American Physical Society. Member of Division of Particle and Fields and Division of Astrophysics. Member of sections Ohio-region and Praire.
- Reviewer of DOE SBIR and ARRA grant applications.
- Reviewer for Physics Letters B, Journal of Instrumentation, and Nucl. Instrum. Methods for scientific and instrument publications.
- Outreach activities including Ask-a-scientist, meeting with visiting high school and college students, lecturer to teachers at Fermilab’s summer teacher program, etc.
- Supervisor of Summer Research Students including GEM engineering students, Italian INFN students, and a summer teacher intern.

## Primary Publications:

1. Coauthor on over 400 physics publications from CDF (1989-present).
2. “Production of  $\psi(2S)$  Mesons in  $p\bar{p}$  Collisions at 1.96 TeV,” submitted to Phys. Rev. D-RC, (2009). Godparent committee member.
3. “Particle Physics and Astrophysics,” Whitepaper submitted to the Astro2010 Decadal Survey for the National Academy of Sciences, xrXiv:0904.0595. Coauthor.
4. “Search for chameleon particles using a photon regeneration technique,” Phys. Rev. Lett. **102**, 030402 (2009). Coauthor.
5. “A Binned Fit Technique for  $b$  hadron Lifetime Measurements,” CDF note 9611, (2008). Coauthor.
6. “GammeV: a gamma to mill-eV particle search at Fermilab,” Proceedings of the 34<sup>th</sup> International Conference on High Energy Physics (ICHEP 2008), Philadelphia, PA. , (Jul 2008), FERMILAB-CONF-08-454-A-E, arXiv:0810.4510 (2008). Primary author.
7. “GammeV: Fermilab axion-like particle photon regeneration results,” Proceedings of the 4<sup>th</sup> Patras Workshop on Axions, WIMPs, and WISPs, Hamburg, Germany, (Jun 2008). FERMILAB-CONF-08-340-A-E. Primary author.
8. “Search for axion-like particles using a variable baseline photon regeneration technique,” Phys. Rev. Lett. **100**, 080402 (2008). Coauthor.
9. “First Observation of the Decay  $B_s^0 \rightarrow D_s^- D_s^+$  and a Measurement of Its Branching Ratio,” Phys. Rev. Lett. **100**, 021803 (2008). Godparent committee member.
10. “Update to the Direct  $B_c^-$  observation and Mass Measurement,” CDF note 9047, (2007). Coauthor.
11. “ $B_c^- \rightarrow J/\psi \pi^-$  at CDF with  $2.2 \text{ fb}^{-1}$ ,” CDF note 8929, (2007). Primary author.
12. “Measurement of the Ratios of Branching Fractions  $\mathcal{B}(B_s^0 \rightarrow D_s^- \pi^+ \pi^- \pi^-)/\mathcal{B}(B^0 \rightarrow D^- \pi^+ \pi^- \pi^-)$  and  $\mathcal{B}(B_s^0 \rightarrow D_s^- \pi^+)/\mathcal{B}(B^0 \rightarrow D^- \pi^+)$ ,” Phys. Rev. Lett. **98**, 061802 (2007). Godparent committee member.
13. “ $B_c^-$  at CDF,” Pub. Proceedings of the 21<sup>st</sup> Lake Louise Winter Institute on Fundamental Interactions, Lake Louise, Alberta, Canada, 372, (Feb 2006). FERMILAB-CONF-06-074-E. Primary author.
14. “The CDF RunIIb Silicon Detector: Design, preproduction, and performance,” Nucl. Instrum. Meth. **A556**, 459, (2006). Coauthor.
15. “ $B_c^-$  at the Tevatron,” Proceedings 10th International Conference on B Physics at Hadron Machines (BEAUTY 2005), Assisi, Perugia, Italy, (Jun 2005). FERMILAB-CONF-05-562-E., Nucl. Phys. B (Proc. Suppl.), **156**, 240, (2006). Primary author.
16. “ $B_c^- \rightarrow J/\psi \pi^-$  with  $1.1 \text{ fb}^{-1}$ ,” CDF note 8004, (2005). Primary author.
17. “Observation of the  $B_c^- \rightarrow J/\psi \pi^-$  Decay,” CDF note 7881, (2005). Primary author.
18. “Search for the Exclusive  $B_c^- \rightarrow J/\psi \pi^-$  Decay,” CDF note 7572, (2005). Primary author.

19. "Dark Energy Survey and Camera," Proceedings Observing Dark Energy, Astronomical Society of the Pacific, Vol, **339**, Tucson, 152, (2004) and FERMILAB-CONF-04-144-A-E, (2004). Primary author.
20. "Supernova / acceleration probe: A Satellite experiment to study the nature of the dark energy," astro-ph/0405232, (2004). Coauthor.
21. "SVX4: A New Deep-Submicron Readout IC for the Tevatron Collider at Fermilab," IEEE Trans. Nucl. Sci, **51**, 1968 (2004). Coauthor.
22. "Proton irradiation effects on 2Gb flash memory," Radiation Effects Data Workshop, 2004 IEEE, pp.68-71, July 2004. Primary author.
23. "Measurement of the Mass Difference  $m(D_s^+) - m(D^+)$  at CDF II", Phys. Rev. D **68**, 0723004, (2003). Chair, CDF Godparent committee.
24. "COT and SVXII Tracking Performance", CDF note 5931, (2002). Responsible for a section on tracking systematics.
25. "Measurement of the  $B$  Meson Lifetimes Using Fully Reconstructed  $B$  Decays Produced in  $\bar{p}p$  Collisions at  $\sqrt{s} = 1.8$  TeV," Phys. Rev. D**65**, 092009, (2002). Chair, CDF Godparent committee.
26. "Measurement of the  $B^+$  Total Cross-section and the  $B^+$  differential Cross-section  $d\sigma/dp_T$  in  $\bar{p}p$  Collisions at  $\sqrt{s} = 1.8$  TeV," Phys. Rev. D**65**, 052005, (2002). Chair, CDF Godparent committee
27. "Linear Collider Physics", hep-ex/0107044 (2001). Responsible for a section on heavy Higgs.
28. "Linear Collider Physics - Resource Book for Snowmass 2001", FERMILAB-Pub-01/058E (2001). Coauthor.
29. "Run2b Silicon Working Group Report", CDF Note 5425, (2000). Responsible for the section on the proposal to use pixels.
30. "Search for a prompt narrow resonance in  $M(\mu^+\mu^-)$  between the  $J/\psi$  and  $\Upsilon$ ", CDF note 5390 (2000). Primary author.
31. " $B_s^0 \rightarrow J/\psi \phi$  expecations in Run II", CDF note 5298, (2000). Primary author.
32. "Search for antiproton decay at the Fermilab Antiproton Accumulator", Phys. Rev.D**62**, 052004, (2000). Coauthor.
33. "Erratum: New Limit on CPT Violation", Phys. Rev. Lett., **85**, 3546, (2000). Primary author.
34. "New Limit on CPT Violation", Phys. Rev. Lett., **84**, 590, (2000). Coauthor with APEX group.
35. "Search for Flavor-Changing Neutral Current Decays  $B^+ \rightarrow \mu^+\mu^-K$  and  $B \rightarrow \mu^+\mu^-K^*$ ," Phys. Rev. Lett. **83**, 3378, (1999). Chair, CDF Godparent committee.
36. "Search for muonic decays of the antiproton at the Fermilab Antiproton Accumulator", Phys. Rev. D**58**, 111101, (1998). Coauthor with APEX group.
37. "A Detector to Search for Antiproton Decay at the Fermilab Accumulator", Nucl. Instrum. Meth. **A411**, 210 (1998). Coauthor with APEX group.

38. "Search for B Meson Decays  $B_d^0 \rightarrow \mu^+\mu^-$  and  $B_s^0 \rightarrow \mu^+\mu^-$  in  $\bar{p}p$  Collisions at  $\sqrt{s} = 1.8$  TeV," Phys. Rev. D-RC, April 1 1998. Coauthor with a CDF student.
39. "Search for the Hadronic Decays  $W/Z^0 \rightarrow jet\ jet$  Using Inclusive Dijets in Run 1C", CDF Note 4191 (1997). Coauthor with a CDF student.
40. "The CDFII Detector, Technical Design Report", FERMILAB-PUB-96-390-E, (Nov. 1996). Responsible for Chapter 4 on the CDF COT.
41. "CDF Run II Tracking Electronics Costs and Schedules Committee Report", CDF Note 3617. (Mar. 1996). Primary author.
42. "Measurement of the Mass of the  $B_s^0$  Meson", Phys. Rev. D**53**, 3496 (1996). Primary author.
43. "Measurement of the Mass of the  $B_s^0$  Meson in  $\bar{p}p$  Collisions at  $\sqrt{s} = 1.8$  TeV," FERMILAB-CONF-95-228-E, Contributed to the International Symposium on Lepton-Photon Interactions (IHEP), Beijing, P.R. China, 10-15 Aug 1995. Primary author.
44. "The Silicon Vertex Detector of the Collider Detector at Fermilab", Nucl. Instrum. Methods **A350**, 73 (1994). Coauthor with the CDF SVX group. Coauthor.
45. "Observation of the Decay  $B_s^0 \rightarrow J/\psi\ \phi$  in  $\bar{p}p$  Collisions at  $\sqrt{s} = 1.8$  TeV," Rev. Lett. **71**, 1685 (1993). Primary author.
46. "SVX Test Beam Results", Nucl. Instrum. Methods **A315**, 188 (1992). Coauthor with the SVX Test Beam group.
47. "The CDF Silicon Vertex Detector: An Overview and Test Results", in Conference Record of the 1991 IEEE Nucl. Sci. Symp., 475 (1991). Primary author.
48. "Production and Decay Properties of the  $\omega\pi^0$  State at 1250 MeV/ $c^2$  Produced by 20-GeV Polarized Photons on Hydrogen", Phys. Rev. D**37**, 2379 (1988). Coauthor.

#### Talks:

1. "GammeV: A gamma to milli-eV particle search," 34<sup>th</sup> International Conference on High Energy Physics (ICHEP 2008), Philadelphia, PA. Aug 2008.
2. "GammeV: Fermilab axionlike particle photon regeneration results," 4<sup>th</sup> Patras Workshop on Axions, WIMPs, and WISPs. Hamburg, Germany, Jun 2008.
3.  $B_c^-$  results presented at the High Energy Physics Seminars at Univ. of Notre Dame (2006) and Univ. of Rochester (2009).
4. GammeV results presented at seminars and colloquia: KICP (Univ. of Chicago), UCLA, Univ. of Chicago, Argonne National Laboratory, Northwestern Univ., Michigan St. Univ. Univ. of Wisconsin, Univ. of Notre Dame, Univ. of Illinois, MIT, Illinois Institute of Technology (2007-2009).
5. "GammeV: One of Fermilab's tiny experiments," Public outreach talk given at Ask-a-scientist, Fermilab (Oct 2008).
6. "Testing Experience with TSMC 0.25  $\mu\text{m}$ ," Presentation at the V<sup>th</sup> International Meeting on Front End Electronics, Snowmass, Co, (Jul 2003).
7. "FNAL LC Vertex Detector R&D", Santa Cruz Linear Collider Retreat, Univ. of California, Santa Cruz, Jun 2002.

8. "The CDF Detector", Physics for Everyone Series, Fermilab, Dec 2001.
9. "Linear Collider and a Very Heavy Higgs", Workshop on the Future of Higgs Physics, Fermilab, May 2001.
10. "Detectors for a Linear Collider", Food for Thought, Fermilab, March 2000.
11. "Plans of the FNAL LC Study Group for heavy Higgs", Berkeley Linear Collider Workshop, Mar 2000.
12. "Search for Antiproton Decay at the Fermilab Antiproton Accumulator", Joint Experimental Theoretical Seminar, Fermilab, Nov. 1999.
13. "*B* Physics at the Tevatron in Run I", Plenary Talk, *B* Physics at the Tevatron - Run II and Beyond, Fermilab, Sept. 1999.
14. "APEX Results, various seminars and colloquia including to the KTeV Collaboration, Tevatron University, the University of Florida, and the University of Chicago. (1998 - 1999).
15. "Search for Antiproton Decay with APEX (E-868) at Fermilab", High Energy Physics Seminars, Lawrence Berkeley National Laboratory and Stanford Linear Accelerator Center, Nov. 1996.
16. "Antiproton Physics", Fermilab User's Meeting, Jun. 1996.
17. "First Results from APEX (E-868): The Antiproton Lifetime", University of Chicago, Enrico Fermi Institute Seminar, May 1996.
18. "From Bottom to Top – a Small Detector Helps a Large Experiment", Departmental Colloquium, Santa Clara University, Mar. 1995.
19. "Measurement of the  $B_s^0$  Mass at CDF", Lunch Seminar, Fermi National Accelerator Laboratory, May 1994.
20. "Observation of the Decay  $B_s^0 \rightarrow J/\psi \phi$  at CDF", Workshop on Physics at Current Colliders and the Supercollider, Argonne National Lab, Jun. 1993.
21. "Measuring the Mass of the  $B_s^0$  Meson with the CDF Detector", Spring Meeting of the American Physical Society, Washington, DC, Apr. 1993.
22. "The CDF Silicon Vertex Detector: An Overview and Test Results", IEEE Nuclear Science Symposium, Sante Fe, NM, Nov. 1991.
23. "Elementary Particle Physics and the CDF Detector", Departmental Colloquium, Xavier University, Oct. 1989.

#### Posters:

1. "GammeV: Gamma to milli-eV particle search, T-969," Presented at the Fermilab DOE annual review, (Sep 2007).
2. "The GammeV Experiment," Presented at the Fermilab annual User's Meeting, (Jun 2007).
3. "Proton Irradiation Effects on 2Gb Flash Memories," Presented at 2004 IEEE Radiation Effects Data Workshop, Atlanta (Jul 2004).

4. "Dark Energy Camera and Survey," Presented at the 22<sup>nd</sup> Texas Symposium on Relativistic Astrophysics," Stanford, CA (Dec 2004).
5. "Dark Energy Camera and Survey," Presented at Observing Dark Energy, Astronomical Society of the Pacific, Tucson, Az. (Mar 2004).