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CURRICULUM VITAE

Kenneth Bloom
Department of Physics and Astronomy
University of Nebraska-Lincoln
Lincoln, NE 68588-0111
(402) 472-6093
kenbloom@unl.edu

Education

1992 A.B. with Honors, Physics, The University of Chicago
1995 M.S., Physics, Cornell University
1997 Ph.D., Physics, Cornell University
Ph.D. Thesis: "Analysis of Semileptonic Decays of B Mesons to D Mesons" (Adviser: Persis Drell)

Employment

1997-1998 Associate Research Scientist, Department of Physics and Astronomy,
The Johns Hopkins University
1998-2004 Research Fellow, Department of Physics, University of Michigan
2004- Assistant Professor, Department of Physics and Astronomy, University
of Nebraska-Lincoln

Research Activities

1989-1992 Collider Detector at Fermilab (CDF) experiment, proton-antiproton collisions at the Fermilab Tevatron. Measurement of cross section for Drell-Yan e^+e^- production. Trigger efficiencies and backgrounds for $W \rightarrow \tau\nu$ analysis. Tested and repaired digital circuit boards for trigger.

1993-1997 CLEO experiment, electron-positron collisions at Cornell Electron Storage Ring (CESR). Measurement of branching fraction and form factor for the decay $B \rightarrow D\nu$ by developing novel technique of full reconstruction. Measurements of $B \rightarrow \pi\nu$ and $B \rightarrow \rho\nu$ branching fractions, and of upper-vertex D production in B decays. Hardware and software for first CLEO silicon vertex detector.

1997-2005 Collider Detector at Fermilab (CDF) experiment, proton-antiproton collisions at the Fermilab Tevatron. First measurements of top-quark branching fractions in Run II data. Measurement of W polarization in top-quark decays. Co-leader of "lepton plus jets" subgroup of top-physics group (2002-2004), overseeing first measurements of top-production cross sections in Run II, organizing analysis groups, leading students in estimation of acceptances for cross section measurements, developing new techniques for estimating backgrounds from fake W bosons. First measurements of $W \rightarrow \mu\nu$ and $Z \rightarrow \mu\mu$ cross sections in Run II. Co-leader of muon-reconstruction group, overseeing successful rewrite of all muon offline software (2000-2003). Design, fabrication,

testing, installation and commissioning of electronics for first stage of track trigger. Design, implementation and testing of silicon-tracking algorithms. Documentation and training classes on software for novices. Search for fourth-generation quarks decaying to Z bosons via flavor-changing neutral currents. Testing of digital electronics for trigger and DAQ systems.

- 2004- D0 experiment , proton-antiproton collisions at Fermilab Tevatron. Tracking studies, top-quark physics
- 2004- Compact Muon Solenoid (CMS) experiment, proton-proton collisions at CERN Large Hadron Collider (LHC). Co-principal investigator for UNL's Tier-2 computing center. Member of US CMS Software and Computing Project Execution Team responsible for all seven US CMS Tier-2 facilities.

Selected Journal Publications (from a list of about 280, available separately)

- “Measurement of Drell-Yan Electron and Muon Differential Cross Sections in $p\bar{p}$ -p Collisions at $\sqrt{s} = 1.8$ TeV,” F. Abe *et al.*, Physical Review D **49**, 1 (1994).
- “First Measurement of the $B \rightarrow \pi l \nu$ and $B \rightarrow \rho(\omega) l \nu$ Branching Fractions,” J.P. Alexander *et al.*, Physical Review Letters **77**, 5000 (1996).
- “Measurement of $B \rightarrow D l \nu$ Partial Width and Form Factor Parameters,” M. Athanas *et al.*, Physical Review Letters **79**, 2208 (1997).
- “Flavor-Specific Inclusive B Decays to Charm,” T.E. Coan *et al.*, Physical Review Letters **80**, 1150 (1998).
- “Search for a Fourth-Generation Quark More Massive than the Z^0 Boson in $p\bar{p}$ -p Collisions at $\sqrt{s} = 1.8$ TeV,” T. Affolder *et al.*, Physical Review Letters **84**, 835 (2000).
- “Online Track Processor for the CDF Upgrade,” E. Thomson *et al.*, IEEE Transactions on Nuclear Science **49**, 263 (2002).
- “First Measurements of Inclusive W and Z Cross Sections from Run II of the Tevatron Collider,” D. Acosta *et al.*, Physical Review Letters **94**, 091803 (2005).
- “Measurement of $\mathbf{B}(t \rightarrow Wb) / \mathbf{B}(t \rightarrow Wq)$ at the Collider Detector at Fermilab,” D. Acosta *et al.*, Physical Review Letters **95**, 102002 (2005).

Conference Talks and Proceedings Contributions

- “Measurement of the Drell-Yan Cross Section at $\sqrt{s} = 1.8$ TeV,” talk presented at American Physical Society General Meeting, April 1992, Washington, DC.
- “Studies of $B \rightarrow D l \nu$ Using Neutrino Reconstruction,” talk presented at American Physical Society General Meeting, May 1996, Indianapolis, IN.
- “Measurement of $\mathbf{B}(B^- \rightarrow D^0 l \nu)$ Using Neutrino Reconstruction Techniques,” Y. Kubota *et al.*, contributed to Lepton-Photon Symposium, 1995.
- “Measurement of $\mathbf{B}(B^0 \rightarrow D^+ l \nu)$ and Extraction of $|V_{cb}|$,” T. Bergfeld *et al.*, contributed to International Conference on High Energy Physics, 1996.
- “Studies of Exclusive Semileptonic B Decays at CLEO,” talk presented at Division of Particles and Fields Meeting, August 1996, Minneapolis, MN, and published in the proceedings, Volume 2, page 742

- “Track Reconstruction for the CDF Silicon Tracking System,” contributed to the International Conference on Computing in High-Energy Physics, August 1998, Chicago, IL, to be published in the proceedings.
- “Fast Track Triggering for the CDF II Detector,” talk presented at Division of Particles and Fields Meeting, August 2000, Columbus, OH, published in Int.J.Mod.Phys.A16S1C, 1172 (2001).
- “Young Physicists’ Perspective,” talk presented at closing plenary session, “Snowmass 2001 – The Future of Particle Physics,” July 2001; summary report of the Young Physicists’ Forum (hep-ex/0110027), published in eConf C010630:I003 (2001).
- “W Cross Sections and Decay Properties at the Tevatron,” invited talk presented at 31st International Conference on High-Energy Physics, July 2002, Amsterdam, The Netherlands (hep-ex/0209030), published in the proceedings.
- “Heavy-Quark Physics at the Tevatron: Charm, Bottom and Top,” invited talk presented at PHENO 2003, Madison, WI, May 2003.
- “Top Physics: CDF Results,” invited talk presented at 39th Rencontres de Moriond, “Electroweak Interactions and Unified Theories,” La Thuile, Italy, March 2004 (hep-ex/0405020), published in the proceedings.
- “Measurement of $\mathbf{B}(t \rightarrow Wb)/\mathbf{B}(t \rightarrow Wq)$,” CDF Collaboration, contributed to International Conference on High Energy Physics, 2004.

Seminars and Lectures

Results from CLEO and CDF experiments presented in high-energy physics seminars and department colloquia presented at the following institutions:

- University of Chicago, May 1996
- University of Maryland, October 1996
- Johns Hopkins University, October 1996
- Harvard University, January 1997
- CERN, February 1997
- Lawrence Berkeley National Laboratory, March 1997
- Stanford Linear Accelerator Laboratory, March 1997
- University of California, San Diego, March 1997
- University of Illinois, Urbana-Champaign, March 1997
- Fermi National Accelerator Laboratory, May 1997
- Wayne State University, November 2000
- University of Illinois, Urbana-Champaign, March 2001
- Cornell University, October 2001
- University of Arizona, February 2002
- University of California, San Diego, February 2002
- Johns Hopkins University, October 2002
- Northwestern University, December 2003
- Brookhaven National Laboratory, January 2004
- McGill University, January 2004
- University of Minnesota, January 2004
- University of California, Riverside, February 2004
- Kansas State University, March 2004
- University of South Carolina, April 2004
- University of Nebraska-Lincoln, April 2004

- Stanford Linear Accelerator Laboratory, August 2004
- Baylor University, November 2004

Lectureships

1999 Saturday Morning Physics, Department of Physics, University of Michigan. Prepared and delivered three lectures on particle physics for general audience of 200.

Teaching

Physics 201H, "Honors Topics in Physics and Astronomy," Fall 2004.

Physics 311, "Mechanics," Spring 2005.

Physics 201H, "Honors Topics in Physics and Astronomy," Fall 2005.

Physics 441, "Experimental Physics I," Fall 2005.

Physics 311, "Mechanics," Spring 2006.

Grants

"US CMS Tier-2 Computing Site at UNL," with D. Swanson and A. Dominguez, \$2,500,000 over five years from National Science Foundation via US CMS, with additional support from University of Nebraska-Lincoln.

"High-Performance Computing for Discovery in Elementary Particle Physics," with A. Dominguez and D. Swanson, \$9905 from University of Nebraska Layman Trust.

"CAREER: Top-Quark Physics, Software and Computing at the Large Hadron Collider," \$550,000 over five years from National Science Foundation.

National/Professional Memberships, Awards and Honors

1988-92 National Merit Scholarship, University of Chicago

1991- Member, American Physical Society

1991-92 Grainger Senior Scholarship, University of Chicago

1992- Member, Phi Beta Kappa

1992- Associate Member, Sigma Xi

1992 Sigma Xi Prize, University of Chicago

1992-95 National Science Foundation Graduate Fellowship, Cornell University

Service

1990-92 Department of Physics Teaching Advisory Committee, University of Chicago

1990-92 Co-chair, Physical Science Student Advisory Committee, University of Chicago

1990-92 Dean's Student Advisory Committee, University of Chicago

1993-95 Graduate Council of Representatives, Cornell University

1995-96 Physics Graduate Student-Faculty Committee, Cornell University

2001 Chair, APS DPF/DPB Snowmass Workshop Young Physicists' Forum Steering Committee

2003-2005 Member, Fermilab Users' Executive Committee

2004-2005 Chair, 2005 Fermilab Users' Meeting Organizing Committee

2004- University of Nebraska-Lincoln Department of Physics and Astronomy Graduate Committee

- 2005- University of Nebraska-Lincoln Department of Physics and Astronomy
Academic Program Committee
- 2005- Faculty Associate, Harris Center for Judaic Studies, University of
Nebraska-Lincoln

Outreach

Visits to rural Nebraska high schools to meet students and teachers and discuss physics and higher-education opportunities: Keya Paha High School (2005), Loup County High School (2005).

Popular Media

- “To Be Young and in Search of the Higgs Boson,” interview in The New York Times, July 24, 2001.
- “Diary,” week-long journal appearing in Slate.com, August 5-9, 2002
(<http://slate.msn.com/?id=2068977&entry=2068982>).
- “Physics prof brings protons to prairie’s rural schools,” interview in the Daily Nebraskan, January 16, 2006
(<http://www.dailynebraskan.com/vnews/display.v/ART/2006/01/17/43cc71a653a44>).