

CURRICULUM VITA

**NAME:** Wesley H. Smith

**BIRTHDATE:** June 14, 1954

**ADDRESS:** 2525 Marshall Parkway  
Madison, WI 53713  
608-251-9610

**OFFICE:** Physics Department, 4275 Chamberlin Hall, University of Wisconsin  
1150 University Ave., Madison, WI 53706  
608-262-4690, Fax: 608-263-0800, Messages: 608-262-2281

**EMAIL:** [wsmith@hep.wisc.edu](mailto:wsmith@hep.wisc.edu)

**HOME PAGE:** <http://www.hep.wisc.edu/wsmith/>

**EDUCATION:** A.B./A.M. in Physics, Harvard University 1976  
Ph.D. in Physics, University of California at Berkeley 1981

**AWARDS:** National Science Foundation Presidential Young Investigator Award 1984  
Exxon Education Foundation Award 1984  
Department of Energy Outstanding Junior Investigator Award 1987  
Vilas Associate, University of Wisconsin 1995  
Election to Fellowship, American Physical Society 1996  
WARF Kellet Mid-Career Faculty Researcher Award, U. Wisconsin 1999  
Named Professorship, University of Wisconsin - Madison 2006

**EXPERIENCE:** Research Associate, Columbia University 1981  
Assistant Professor, Columbia University 1982  
Associate Professor, Columbia University 1987  
Associate Professor, University of Wisconsin - Madison 1988  
Professor, University of Wisconsin - Madison 1992  
Bjorn Wiik Professor of Physics, University of Wisconsin - Madison 2006

**PROFESSIONAL SERVICE:**

- Organizer, APS Washington Meeting. 1985-86
- Tevatron Association of Fixed Target Spokespersons (Fermilab). 1986-88
- Spokesman, Fermilab E-770: CCFR Neutrino Experiment. 1986-98
- Panel Member, NSF Physics Division Research Experiences for Undergraduates Program Advisory Board. 1987
- Chairman, NSF Physics Division Research Experiences for Undergraduates Program Advisory Board. 1988
- Organizer, FNAL Conference on New Directions in Neutrino Physics 1988
- Panel Member, NSF Presidential Young Investigator Advisory Board. 1988
- Referee Physical Review & Physical Review Letters. 1988-

- Technical Coordinator (Trigger), Zeus Experiment, DESY, Hamburg. 1988-93
- International Advisory Committee, Neutrino '90 Conference, CERN, Switzerland. 1989
- Deputy Spokesman, Fermilab E-790: Zeus Barrel Calorimeter Test. 1989-91
- Panel Member & Session Chair, R & D Triggering and Data Acquisition Systems for 1990  
SSC Experiments
- Reviewer, Nuclear Science Symposium of the IEEE. 1990-
- Technical Board Member & Technical Steering Committee Chairman Solenoidal 1990-93  
Detector Collaboration, SSC
- Regional Coordinator, National SSC Coalition. 1991-93
- Program Chairman, IEEE Nuclear Science Symposium, Orlando, FL. 1992
- Scientific Spokesman, Trigger System, Solenoidal Detector Collaboration, SSC. 1992-93
- Chair, Director's Review of D0 Computing, Fermilab, IL. 1993
- Trigger Convener, Zeus Experiment, DESY, Hamburg. 1993-07
- National Science and Engineering Research Council Review of the HERMES 1993  
Experiment, TRIUMF, Vancouver, Canada.
- Convener, QCD Working Group, American Physical Society Division of Particles and 1994  
Fields Panel on Long Term Planning
- Organizer, DPF Workshop on QCD, Madison, WI. 1994
- U.S. Coordinator, Trigger System, Compact Muon Solenoid Detector, CERN. 1994-97
- Session Chair, Workshop on LHC Computing, International Conference on Computing 1994  
in High Energy Physics.
- U.S. Management Board, Compact Muon Solenoid Detector, CERN. 1994-
- Project Manager, Trigger System, Compact Muon Solenoid Detector, CERN. 1994-07
- LHC Electronics Review Board, CERN. 1994-96
- Management Board, Compact Muon Solenoid Detector, CERN. 1994-
- Organizing Committee, Topics in Particle Physics with CMS, UCLA. 1995
- Proposal Reviewer, Department of Energy 1995-
- Proposal Reviewer, National Science Foundation 1995-
- Chair, U.S. Zeus Executive Committee, DESY 1995-97
- Organizing Committee, Conf. on Electronics for LHC Experiments, Lisbon, Portugal. 1995
- Zeus Planning Group, DESY 1995-97
- Zeus Executive Committee, DESY 1995-
- Department of Energy High Energy Physics subpanel on Accelerator-Based Neutrino 1995  
Oscillation Experiments
- Department of Energy High Energy Physics Advisory Panel 1995-98
- National Science Foundation High Energy Physics Review Panel 1995-96
- Advisory Committee, Division of Particles and Fields Sessions at 1996 American 1995-96  
Physical Society Meeting, Indianapolis, IN
- Organizing Committee, 1996 Meeting of the Division of Particles and Fields, 1995-96  
Minneapolis, MN
- Convener, QCD Working Group, Division of Particles and Fields Study of New 1996  
Directions in Particle Physics, Snowmass, CO
- LHC Electronics Board, CERN. 1996-01

- Organizing Committee and Panel Member, Second Conference on Electronics for LHC 1996 Experiments, Balaton, Hungary
- Organizing Committee and Session Chair, Third Conference on Electronics for LHC 1997 Experiments, London, England
- Level 2 Manager, Trigger and Data Acquisition Systems, US. Project for the Compact Muon Solenoid Detector, CERN. 1997-
- Steering Committee, Compact Muon Solenoid Detector, CERN. 1997-06
- Chair and Organizer, International Meeting of the CMS Collaboration in Madison 1997
- Session Chair & Presenter, DoE Office of Energy Research Scientific Themes 1998 Conference
- Department of Energy Outstanding Junior Investigator Selection Panel. 1998-99
- American Physical Society Division of Particles & Fields Nominating Committee 1998-99
- Member, US-CMS Project Management Group 1998-
- Organizing Committee and Session Chair, Fourth Conference on Electronics for LHC 1998 Experiments, Rome, Italy
- Zeus Editorial Panel, DESY 1998-
- Chair, Organizing Committee, Fifth Conference on Electronics for LHC Experiments, 1999 Snowmass, CO.
- Chair, American Physical Society Division of Particles & Fields Nominating Committee 1999
- Co-Chair, Aspen Winter Conference on Particle Physics 2000
- Organizing Committee and Session Chair, Sixth Conference on Electronics for LHC 2000 Experiments, Krakow, Poland
- Member, Department of Energy Trans-Atlantic Network Committee 2001
- Organizing Committee and Session Chair, Seventh Conference on Electronics for LHC 2001 Experiments, Stockholm, Sweden
- Particle Physics and Technology Working Group Convener, American Physics Society 2001 Summer Study on the Future of Particle Physics, Snowmass, CO.
- Member, CMS Electronics Systems Steering Committee 2001-
- Organizing Committee and Session Chair, Eighth Conference on Electronics for LHC 2002 Experiments, Colmar, France.
- Executive Committee, US LHC Collaborators Organization 2002-
- Member, Ad-Hoc Working Group on LHC Experiment-Machine Parameter and Signal 2002-3 exchange, CERN
- Chair, U.S. Zeus Executive Committee, DESY 2003-6
- Organizing Committee, Ninth Conference on Electronics for LHC Experiments, 2003 Amsterdam, Netherlands.
- Member, LHC Experiment Machine Data Exchange Working Group, CERN 2003-
- Consultant, Annual DoE Review of Fermilab 2003
- Member, Machine Experiment Interface Working Group, European Steering Group on 2003-4 Accelerator R&D
- Organizing Committee and Session Chair, Ninth Conference on Electronics for LHC 2003 Experiments, Amsterdam, Netherlands.
- Consultant, Annual DoE Review of Fermilab 2004
- Organizing Committee and Session Chair, Tenth Conference on Electronics for LHC 2004

Experiments, Boston, MA.

- Conference Chairman, 13<sup>th</sup> International Workshop on Deep Inelastic Scattering, 2005 (DIS'05) Madison, WI.
- Organizing Committee and Session Chair, Eleventh Conference on Electronics for LHC 2005 Experiments, Heidelberg, Germany
- NSF Review Panel, Center for the Study of the Origin and Structure of Matter, Hampton 2005 College, VA.
- Proposal Reviewer, Israeli Science Foundation 2005-
- Fermilab Remote Operations Center Review Committee 2005
- CMS SLHC Upgrade Steering Group 2005-
- Task Manager & Principle Investigator High Energy Physics Grant, UW-Madison 2005-
- International Advisory Committee, 14<sup>th</sup> International Workshop on Deep Inelastic Scattering, Tsukuba city, Japan. 2006
- Member, Zeus Planning Group, DESY 2006-7
- Referee, Journal of High Energy Physics 2006-
- Organizing Committee and Session Chair, Twelfth Conference on Electronics for LHC 2006 Experiments, Valencia, Spain
- Vice-Chairman, Department of Energy and National Science Foundation High Energy 2006-7 Physics Subpanel on the University Research Program
- Referee, Journal of Measurement Science and Technology (Institute of Physics) 2006-
- Organizing Committee, Workshop on R&D for the SLHC, CERN. 2007
- International Advisory Committee, 15<sup>th</sup> International Workshop on Deep Inelastic Scattering, Munich, Germany. 2007
- Organizing Committee and Session Chair, Topical Workshop on Electronics for Particle 2007 Physics, Prague, Czech Republic.
- CMS Trigger Coordinator 2007-
- CMS Executive Board Member 2007-
- Chair, CMS SLHC Calorimeter Trigger Workshop, U. Wisconsin, Madison WI 2007
- LHeC Steering Committee member, CERN. 2007-
- Panel Member, HEP University Funding, Aspen Winter Conference on Particle Physics 2008
- Co-Chair, CMS SLHC Trigger Workshop, École Polytechnique, Paris. 2008
- Organizing Committee, Topical Workshop on Electronics for Particle Physics, Naxos, 2008 Greece
- International Advisory Committee, 16<sup>th</sup> International Workshop on Deep Inelastic Scattering, London, England. 2008
- Chair, CMS Upgrade Peer Review Panel 2008-
- Member, CMS Upgrade Management Board 2008-
- Reviewer, United States – Israel Binational Science Foundation 2008-
- Organizing Committee and Session Chair, Topical Workshop on Electronics for Particle 2009 Physics, Paris, France.
- International Advisory Committee, 17<sup>th</sup> International Workshop on Deep Inelastic Scattering, Prague, Czech Republic. 2009
- Organizing Committee, ATLAS CMS Electronics for the SLHC (ACES II), CERN 2009

**INVITED TALKS:****1982**

- Seminar at Stanford Linear Accelerator Summer Institute on Particle Physics: A Search for Neutrino Oscillations with  $\Delta M^2 > 20 \text{ eV}^2$ .

**1983**

- Seminar at Stanford Linear Accelerator Center: Neutrino Production of Charm from the CCFRR Experiment.
- Colloquium at Lawrence Berkeley Lab: Neutrino Production of Charm from the CCFRR Experiment
- Colloquium at CERN: A Search for Inclusive Oscillations of Muon Neutrinos in the Mass Range,  $20 < \Delta M^2 < 900 \text{ eV}^2/c^4$
- Speaker, International Europhysics Conference on High Energy Physics, Brighton, England: A Search for Inclusive Oscillations of Muon Neutrinos in the Mass Range,  $20 < \Delta M^2 < 900 \text{ eV}^2/c^4$

**1984**

- Seminar, University of Maryland: Limits on Muon Neutrino Oscillation.
- Colloquium, Fermilab: Neutrino Production of Dimuons.
- Colloquium, Columbia University: Neutrino Production of Dimuons.
- Speaker, Neutrino '84 Conference, Nordkirchen, Germany: Neutrino Production of Dimuons
- Speaker, Stanford Summer School on High Energy Physics: Neutrino Production of Dimuons.

**1985**

- Colloquium at CERN: Neutrino Production of Dimuons
- Speaker, International Europhysics Conference on High Energy Physics, Bari, Italy: Neutrino Production of Dimuons.
- Speaker, Fermilab Workshop on Gas Calorimetry: Flash ADC Readout of Hadron Showers in Drift Chambers.
- Colloquium, Columbia University: High Energy Neutrino Physics.

**1986**

- Seminar, Michigan State University: Neutrino Production of Dimuons.
- Speaker, Fermilab Workshop on Beam Dump Physics: Beam Dump Physics with the CCFR Detector.
- Speaker, Neutrino '86 Conference, Sendai, Japan: Neutrino Production of Dimuons
- Seminar, Stanford Linear Accelerator Center: Recent Results from the CCFR Neutrino Experiment.
- Speaker, Snowmass Summer Study, Snowmass, CO.: Front End Electronics for the Zeus Calorimeter.
- Colloquium, Zeuthen Institute, East Germany: Recent Results from the CCFR Neutrino Experiment.

**1987**

- Colloquium, Columbia University: Neutrino Production of Dimuons.
- Seminar, University of Wisconsin: Neutrino Production of Dimuons.
- Seminar, Syracuse University: Neutrino Production of Dimuons
- Seminar, University of California, Los Angeles: Neutrino Production of Same Sign Dimuons.
- Seminar, Argonne National Lab: Neutrino Production of Same Sign Dimuons.

- Colloquium, University of California, Los Angeles: Probing the Proton with Lepton Microscopes.
- Speaker, Stanford Summer School on High Energy Physics: Neutrino Production of Same Sign Dimuons.
- Colloquium, DESY, Hamburg, Germany: Neutrino Production of Same Sign Dimuons.

**1988**

- Plenary Speaker, American Physical Society Annual Meeting, Baltimore, MD: Neutrino Production of Dimuons.
- Speaker, Neutrino '88, Boston, MA: Review of Multilepton Production.
- Plenary Speaker, Division of Particles and Fields Summer Study on Physics in the 1990's, Snowmass, CO.: New Particles in ep Collisions.
- Speaker, Workshop on New Directions in Neutrino Physics, Fermilab: Multilepton Production by Neutrinos
- Colloquium, University of Wisconsin: Neutrino Production of Dimuons.
- Colloquium, Los Alamos National Lab, NM: Neutrino Production of Dimuons.
- Seminar, University of Florence, Italy: Neutrino Production of Dimuons.
- Seminar, University of Florence, Italy: New Particles in ep Collisions.

**1989**

- Speaker, Workshop on Triggering and Data Acquisition at the SSC, Toronto, Canada: The Zeus First Level Calorimeter Trigger.
- Speaker, Workshop on Calorimetry for the Superconducting Supercollider, Tuscaloosa, AL.: A Pipelined Calorimeter First Level Trigger.
- Speaker, SSC Workshop on Trigger Algorithms, Berkeley, CA.: Pipelining.

**1990**

- Colloquium, Oxford University, Oxford, England: Recent Results from the CCFR Experiment at FNAL.
- Colloquium, University of Toronto, Toronto, Canada: Recent Results from the CCFR Experiment at FNAL.
- Invited Talk, Neutrino 1990, CERN, Switzerland: Nucleon Structure Functions from  $\nu_e$  - Fe Scattering at the Tevatron.
- Plenary Speaker, Division of Particles and Fields Summer Study on Research Directions for the Decade, Snowmass, CO.: Electron-Proton Collider Experiments and Detectors.
- Colloquium, University of Wisconsin: Probing the Proton with Lepton Microscopes.
- Plenary Speaker, IEEE Nuclear Science Symposium, Washington, DC: High Energy Physics Data Acquisition and Trigger Systems.
- Seminar, University of Michigan, Ann Arbor, MI.: Nucleon Structure Functions from  $\nu_\mu$  - Fe Scattering at the Tevatron.
- Seminar, University of California, Santa Cruz, CA.: Electron-Proton Collider Experiments and Detectors.

**1991**

- Invited Talk, SSC Physics Symposium, Madison, WI.: The SDC Detector.
- Seminar, Lawrence Berkeley Laboratory, CA.: The Zeus Detector at the HERA ep Collider.
- Invited Talk, Joint International Lepton-Photon Symposium & Europhysics Conference on High Energy Physics, Geneva, Switzerland: Electroweak Results from the CCFR Experiment.
- Invited Talk, Particles and Fields 1991, Vancouver, Canada: The SDC Detector.
- Invited Talk, Particles and Fields 1991, Vancouver, Canada: Electroweak Results from the CCFR

Experiment.

### 1992

- Invited Talk, Neutrino '92, Granada, Spain: Neutrino Production of Dimuons at the Fermilab Tevatron.
- Invited Talk, SLAC Summer Institute, Stanford, CA: Neutrino Scattering Results from CCFR.
- Colloquium, University of Wisconsin: Probing Nucleons with High Energy Neutrinos.
- Invited Talk, Computing in High Energy Physics, Annecy, France: The SDC Trigger.
- Invited Talk, Colliding Beam Conference, Yale University, New Haven, CN: New Physics at e-p Colliders.

### 1993

- Seminar, University of Maryland, College Park, MD: Recent Results on ep Scattering from Zeus.
- Invited Talk, SSC Physics Symposium, Madison, WI.: Recent Results on ep Scattering from Hera.
- Seminar, Fermilab, Batavia, IL: Recent Results on ep Scattering from Zeus.
- Seminar, DESY, Hamburg, Germany: Neutrino Scattering Results from CCFR.
- Invited Talk, International Europhysics Conference on High Energy Physics, Marseille, France: Next to Leading Order QCD Analyses of Neutrino Structure Functions and Charm Production.
- Seminar, CERN, Geneva, Switzerland: Neutrino Scattering Results from CCFR.
- Invited Talk, HERA Workshop on Internal Target Physics, DESY, Hamburg, Germany: SSC Electronics Developments.
- Seminar, University of Michigan, Ann Arbor, MI: Neutrino Scattering Results from CCFR.
- Seminar, University of Chicago, IL: Recent Results on ep Scattering from Zeus.
- Seminar, University of Wisconsin, Madison, WI: Neutrino Scattering Results from CCFR.
- Seminar, University of Wisconsin, Madison, WI: Recent Results on ep Scattering from Zeus.

### 1994

- Colloquium, University of Wisconsin, Madison, WI: Probing Hadronic Substructure at HERA.
- Invited Talk, "Physics Doesn't Stop Symposium", Madison, WI.: Recent Results from HERA.
- Seminar, University of Iowa, Iowa City, IA: Neutrino Scattering Results from CCFR.
- Invited Talk, Eighth Meeting of the Division of Particles and Fields, Albuquerque, NM: The Level-1 Calorimeter Trigger for the CMS Detector.
- Invited Talk, Eighth Meeting of the Division of Particles and Fields, Albuquerque, NM: Recent Results from the CCFR Neutrino Experiment at the Tevatron.
- Invited Talk, Eighth Meeting of the Division of Particles and Fields, Albuquerque, NM: Measurement of the Proton Structure Function  $F_2$  from the 1993 HERA Data.
- Colloquium, Florida Sate University, Tallahassee, FL: Recent Results on ep scattering from ZEUS.

### 1995

- Invited Talk, Topics in Particle Physics with CMS, University of California, Los Angeles, CA: Triggering the CMS Detector.
- Invited Talk, First Workshop on Electronics for LHC Experiments, Lisbon, Portugal: CMS Calorimeter Circuits.
- Seminar, University of California at Davis: Recent Results on ep Scattering from Zeus.
- Invited Talk, IEEE Nuclear Science Symposium, San Francisco, CA: CMS Calorimeter Circuits.
- Invited Talk, Detector Data Link Workshop, CERN, Switzerland: CMS Trigger Level-1 Links.

### 1996

- Invited Plenary Talk, Division of Particles and Fields 1996 Summer Study on New Directions in Particle Physics, Snowmass, CO: QCD Working Group Report.

- Two Invited Lectures, Stanford Summer Institute on Particle Physics, Stanford, CA: QCD with ep Colliders.
- Invited Talk, Second Workshop on Electronics for the LHC, Balatonfured, Hungary: CMS Calorimeter Trigger Implementation and Performance.
- Colloquium, University of Wisconsin: QCD Studies at HERA.
- Seminar, University of Chicago: QCD Studies at HERA.
- Seminar, University of Michigan: QCD Studies at HERA.
- Seminar, University of California, Los Angeles: Measurements of Photoproduction and Diffraction at HERA.
- Colloquium, University of California, Los Angeles: QCD Studies at HERA.

**1997**

- Invited Talk, International Workshop on LHC-CMS, Kaist, Taejon, Korea: The CMS Trigger.
- Invited Talk, Third Workshop on Electronics for the LHC, London, England: High-speed Data Processing for CMS Calorimeter Trigger.
- Colloquium, Northwestern University, Evanston, IL: ep Collisions with the Zeus Detector at HERA.

**1998**

- Seminar, Michigan State University, Lansing, MI: ep Collisions with the Zeus Detector at HERA.
- Invited Talk, Fourth Workshop on Electronics for the LHC, Rome, Italy: CMS Calorimeter Trigger Receiver System.
- Seminar, Rice University, Houston, TX: CMS and Heavy Ions.
- Seminar, MIT, Boston, MA: Triggering High Energy Physics Experiments.

**1999**

- Invited Talk, UW-Madison Physics Department Centennial Celebration: High Energy Physics in the Next Millennium.
- Seminar, University of Florida, Gainesville, FL: ep Collisions with the Zeus Detector at HERA.

**2000**

- Invited Talk, Sixth Workshop on Electronics for the LHC, Krakow, Poland: CMS Regional Calorimeter Trigger High Speed ASICs.
- Plenary Speaker, IEEE Nuclear Science Symposium, Lyon, France: LHC Data Acquisition and Trigger Systems.
- Plenary Speaker, Workshop on Physics with CMS, Bombay, India: CMS Trigger

**2001**

- Plenary Speaker, Vienna Conference on Instrumentation, Vienna, Austria: LHC Trigger Systems.
- Invited Talk, HEPAP Subpanel on Long Range Planning, Arlington, VA: Particle Physics and Technology
- Invited Talk, Seventh Workshop on Electronics for the LHC, Stockholm, Sweden: CMS regional calorimeter Trigger Jet logic

**2002**

- Invited Talk, Eighth Workshop on Electronics for the LHC, Colmar, France: Tests of the CMS Level-1 Regional Calorimeter Trigger Prototypes

**2003**

- Seminar, Imperial College, London, England: Triggering on Discovery Physics at the LHC.
- Seminar, Universidad Autonoma de Madrid, Spain: Triggering on Discovery Physics at the LHC.
- Invited Talk, Ninth Workshop on Electronics for the LHC, Amsterdam, Netherlands: Full Crate

## Tests of the CMS Level-1 Regional Calorimeter Trigger

**2004**

- Invited Plenary Talk, New Results from ZEUS, 12<sup>th</sup> International Workshop on Deep Inelastic Scattering (DIS '04), Strbske Pleso, Slovakia.
- Invited Plenary Talk, Tenth Workshop on Electronics for the LHC, Boston, MA.: Trigger and Data Acquisition for the Super LHC.

**2005**

- Seminar, Fermilab, Batavia, IL: R&D for the SLHC.
- Seminar, Northwestern University, Evanston, IL: Deep Inelastic Scattering.
- Invited Plenary Talk, 2005 International Linear Collider Physics and Detector Workshop, Snowmass, CO.: Physics and Detectors at the LHC and the SLHC

**2006**

- Academic Lecture, Fermilab, Batavia, IL: CMS Trigger and Data Acquisition.
- Academic Lecture, CERN, Geneva, Switzerland: SLHC Trigger and Data Acquisition
- Invited Plenary Talk, Pheno 06, Madison, WI: New Physics Searches at HERA
- Seminar, Cornell University, Ithaca, NY: SLHC R&D for Trigger and Data Acquisition
- Invited Talk, IEEE Nuclear Science Symposium, San Diego, CA: The CMS Regional Calorimeter Electronics Integration.
- Seminar, DESY, Hamburg, Germany: The CMS Trigger

**2007**

- Invited Plenary Talk, Aspen Winter Conference on Particle Physics: QCD Results from Colliders
- Invited Plenary Talk, 15<sup>th</sup> IEEE NPSS Real Time Conference 2007, Fermilab, Batavia, IL: CMS SLHC Trigger and DAQ.
- Seminar, Los Alamos National Lab, Los Alamos, NM: CMS SLHC Trigger and DAQ.
- Seminar, Imperial College, London: CMS SLHC Trigger and DAQ.

**2008**

- Invited Plenary Talk, Aspen Winter Conference on Particle Physics: The SLHC Program and Detector Upgrades.
- Seminar, University of Chicago, QCD results from HERA.
- Invited Plenary Talk, LHC start-up and Early Data, 16<sup>th</sup> International Workshop on Deep Inelastic Scattering (DIS '08), London, England.
- Academic Lectures: Experimental techniques: Triggers, CERN-Fermilab Joint 2008 Hadron Collider Physics Summer School, Fermilab, Illinois.
- Colloquium; University of New York at Stony Brook: Startup of the Large Hadron Collider.
- Seminar: Triggering the CMS Detector, Los Alamos National Lab, New Mexico.

**2009**

- Academic Lecture: The CMS Trigger, US CMS J-Term School, Fermilab, Illinois.
- Seminar: Triggering at CMS, Fermilab, Illinois.
- Invited Plenary Talk: CMS detector global status, XXth Hadron Collider Physics Symposium, Évian-les-Bains (France) – to be given Nov. 2009.

**GRANTS WHERE PRINCIPAL INVESTIGATOR****Columbia University**

1984-1988 National Science Presidential Young Investigator: 144K.  
 1984 Exxon Educational Foundation Presidential Young Investigator:  
 10K.  
 1986 Sun Microsystems, Inc.: 25K.  
 1986 Fermilab: 250K.  
 1987 Department of Energy Outstanding Junior Investigator: 50K.  
 1988 LeCroy Research Systems: 4K.  
 1988 Racal-Redac, Inc.: 10K

**University of Wisconsin**

1988 National Science Foundation Presidential Young Investigator: 76K  
 1988 LeCroy Research Systems: 4K.  
 1988 Racal-Redac, Inc.: 10K  
 1988 Department of Energy: 50K.  
 1988 Apollo Computer, Inc: 41K.  
 1988 U. Wisconsin Graduate School: 48K  
 1989 Department of Energy (with Don Reeder): 525K.  
 1989 U. Wisconsin Graduate School: 18K  
 1989 Mentor Graphics, Inc.: 250K  
 1990 Department of Energy (with Don Reeder): 495K.  
 1990 Department of Energy Supplement: 107K.  
 1990 Department of Energy SSC Funding: 50K.  
 1990 Racal-Redac, Inc.: 25K.  
 1991 Department of Energy (with Don Reeder): 569K.  
 1991 Department of Energy Supplement: 1,327K.  
 1991 Department of Energy SSC Funding: 26K.  
 1991 Texas National Research Lab: 146K.  
 1991 U. Wisconsin Graduate School: 13K.  
 1991 LBL SSC Funding: 75K.  
 1992 Department of Energy (with Don Reeder): 660K.  
 1992 Department of Energy Supplement: 1,050K.  
 1992 Department of Energy SSC Funding: 170K.  
 1992 Texas National Research Lab: 150K.  
 1992 U. Wisconsin Graduate School: 12K.  
 1993 Department of Energy (with Don Reeder): 830K.  
 1993 Department of Energy Supplement: 685K.  
 1993 Department of Energy SSC Funding: 263K.  
 1993 Department of Energy SSC Funding (w/Reeder): 75K  
 1993 Texas National Research Lab: 150K  
 1993 U. Wisconsin Graduate School: 8K.  
 1994 Department of Energy (with Don Reeder): 850K.  
 1994 Department of Energy Supplement: 707K.  
 1994 Department of Energy SSC Funding: 126K.  
 1994 Department of Energy SSC Funding (with Don Reeder): 40K  
 1994 U. Wisconsin Graduate School (with Don Reeder): 18K.  
 1994 Department of Energy Supplement: 101K.

1995 Department of Energy (with Don Reeder): 850K.  
 1995 Department of Energy (with Don Reeder): 100K.  
 1995 Department of Energy Suppl. (w/Reeder): 60K.  
 1995 U. Wisconsin Graduate School: 30K.  
 1996 Department of Energy (with Don Reeder): 855K.  
 1996 Department of Energy Suppl. (with Don Reeder): 25K.  
 1996 Department of Energy (with Don Reeder): 143K.  
 1996 Department of Energy (with Don Reeder): 339K.  
 1996 U. Wisconsin Graduate School: 8K.  
 1996 Vilas Associate: 25K.  
 1997 Department of Energy (with Don Reeder): 854K.  
 1997 Department of Energy (with Don Reeder): 130K.  
 1997 Department of Energy (with Don Reeder): 175K.  
 1997 Department of Energy (with Don Reeder): 510K.  
 1997 U. Wisconsin Graduate School: 12K.  
 1997 Vilas Associate: 25K.  
 1998 Department of Energy (with Don Reeder): 837K.  
 1998 Department of Energy (with Don Reeder): 200K.  
 1998 Department of Energy (with Don Reeder): 657K.  
 1998 Argonne National Lab: 38K.  
 1999 Department of Energy (with Don Reeder): 700K.  
 1999 Department of Energy (with Don Reeder): 420K.  
 1999 Department of Energy (with Don Reeder): 470K.  
 1999 Fermilab: 68K.  
 1999 Argonne National Lab: 30K.  
 1999-04 WARF Kellet Mid-Career Faculty Researcher Award: 60K.  
 2000 Department of Energy (with Don Reeder): 665K.  
 2000 Department of Energy (with Don Reeder): 459K.  
 2000 Department of Energy (with Don Reeder): 470K.  
 2000 Fermilab (with Don Reeder): 622K.  
 2000 Department of Energy (with Don Reeder): 35K.  
 2000 Argonne National Lab: 30K.  
 2001 Department of Energy (with Don Reeder): 700K.  
 2001 Department of Energy (with Don Reeder): 482.5K.  
 2001 Department of Energy (with Don Reeder): 504K.  
 2001 Department of Energy (with Don Reeder): 35K.  
 2001 Fermilab (with Don Reeder): 938.9K.  
 2001 U. Wisconsin Graduate School (with Don Reeder, Dasu): 32.5K.  
 2002 Department of Energy (with Don Reeder): 575K.  
 2002 Department of Energy (with Don Reeder): 520K.  
 2002 Department of Energy (with Don Reeder): 193K.  
 2002 Department of Energy (with Don Reeder): 35K.  
 2002 Fermilab (with Don Reeder): 1,128K  
 2002 Wiezmann/Isreal (with Don Reeder) 24K  
 2003 Department of Energy (with Don Reeder): 560K.  
 2003 Department of Energy (with Don Reeder): 635K.  
 2003 Department of Energy (with Don Reeder): 261K.

2003 Department of Energy (with Don Reeder): 35K.  
2003 Fermilab (with Don Reeder): 621K  
2003 U. Wisconsin Graduate School (with Don Reeder): 28K.  
2003 Weizmann/Israel (with Don Reeder) 7K  
2004 Northeastern University – NSF: 1,743K  
2004 Department of Energy (with Don Reeder): 550K.  
2004 Department of Energy (with Don Reeder): 757K.  
2004 Department of Energy (with Don Reeder): 51K.  
2004 Department of Energy (with Don Reeder): 35K.  
2004 Department of Energy (with Don Reeder): 384K  
2004 Fermilab/Department of Energy (with Don Reeder): 1,035K  
2005 Department of Energy (with Don Reeder): 547K  
2005 Department of Energy (with Don Reeder): 1,176K  
2005 Department of Energy (with Don Reeder): 140K  
2005 Fermilab/Department of Energy (with Don Reeder): 419K  
2005 U. California Los Angeles - NSF: 707K  
2005 National Science Foundation (NSF): 7K  
2005 U. Wisconsin Graduate School: 22K  
2006 Department of Energy: 356K  
2006 Department of Energy: 1320K  
2006 National Science Foundation: 68K  
2006 National Science Foundation: 618K (with Dasu)  
2006 U. Wisconsin Graduate School Named Chair: 75K  
2006 Fermilab/Department of Energy: 82K  
2006 Weizmann/Israel: 10K  
2007 Department of Energy: 100K  
2007 Department of Energy: 1275K (with Dasu, Carlsmith)  
2007 Department of Energy: 359K  
2007 National Science Foundation: 151K  
2007 National Science Foundation: 750K (with Dasu)  
2007 National Science Foundation: 153K (with Carlsmith)  
2007 U. Wisconsin Graduate School: 30K  
2008 Department of Energy: 1433K (with Dasu, Carlsmith)  
2008 Fermilab/Department of Energy: 312K  
2008 National Science Foundation: 470K  
2008 National Science Foundation: 184K(w/ Dasu, Compton, Schulte)  
2008 National Science Foundation: 759K (w/Dasu)  
2008 U. Wisconsin Graduate School: 30K  
2009 Department of Energy: 1517K (with Dasu, Carlsmith)  
2009 Fermilab/Department of Energy: 687K  
2009 National Science Foundation: 547K  
2009 National Science Foundation: 682K (w/Dasu)

**TEACHING:**  
**Columbia University**

Semester	Course	Description
Fall '82	Physics 1003	General Physics for Science Majors
Spring '83	Physics 1004	" "
Fall '83	Physics 1003	" "
Spring '84	Physics 1004	" "
Fall '84	Physics 1003	" "
Spring '85	Physics 1004	" "
Fall '85	Physics 1001	Physics for Liberal Arts Majors
Spring '86	Physics 1002	" "
Fall '86	Physics 1001	" "
Spring '87	Physics 1002	" "
Fall '87	On Leave	
Spring '88	Physics 1004	General Physics for Science Majors

**Freshman Seminar**  
**University of Wisconsin**

Semester	Course	Description
Fall '88	Physics 623	Electronic Aids to Measurement
Spring '89	Physics 623	Electronic Aids to Measurement
Fall '89	Physics 623	Electronic Aids to Measurement
Spring '90	Physics 623	Electronic Aids to Measurement
Fall '90	Physics 201	General Physics
Spring '91	Physics 201	General Physics
Spring '91	Physics 301	Physics Today*
Spring '92	Physics 202	General Physics
Spring '92	Physics 301	Physics Today*
Fall '92	Physics 201	General Physics
Fall '92	Physics 301	Physics Today*
Spring '93	Physics 202	General Physics
Spring '93	Physics 301	Physics Today*
Fall '93	Physics 201	General Physics
Fall '93	Physics 301	Physics Today*
Spring '94	Physics 202	General Physics
Spring '94	Physics 301	Physics Today*
Fall '94	Physics 201	General Physics
Spring '95	Physics 202	General Physics
Spring '95	Physics 301	Physics Today*
Fall '95	Physics 201	General Physics
Spring '96	Physics 202	General Physics
Spring '96	Physics 301	Physics Today*
Fall '96	Physics 201	General Physics
Spring '97	Physics 202	General Physics
Spring '97	Physics 301	Physics Today*
Fall '97	Physics 201	General Physics
Spring '98	Physics 202	General Physics
Spring '98	Physics 301	Physics Today*

Fall '98	Physics 201	General Physics
Spring '99	Physics 301	Physics Today*
Fall '99	Physics 201	General Physics
Spring '00	Physics 202	General Physics
Spring '00	Physics 301	Physics Today*
Fall '00	Physics 201	General Physics
Spring '01	Physics 202	General Physics
Spring '01	Physics 301	Physics Today*
Fall '01	Physics 201	General Physics
Spring '02	Physics 202	General Physics
Spring '02	Physics 301	Physics Today*
Fall '02	Physics 201	General Physics
Spring '03	Physics 202	General Physics
Spring '03	Physics 301	Physics Today*
Fall '03	Physics 201	General Physics
Spring '04	Physics 202	General Physics
Spring '04	Physics 301	Physics Today*
Fall '04	Physics 201	General Physics
Spring '05	Physics 202	General Physics
Spring '05	Physics 301	Physics Today*
Fall '05	Physics 103	General Physics
Spring '06	Physics 103	General Physics
Spring '06	Physics 301	Physics Today*
Fall '06	Physics 103	General Physics
Spring '07	Physics 104	General Physics
Spring '07	Physics 301	Physics Today*
Fall '07	Physics 103	General Physics
Spring '08	Physics 104	General Physics
Spring '08	Physics 301	Physics Today*
Fall '08	Sabbatical	
Spring '09	Physics 301 / Sabbatical	Physics Today*
Fall '09	On Leave	

\*Course Developed by Prof. Smith

**COMMITTEE SERVICE**

- Columbia: Undergraduate Curriculum Committee (5 years),  
Colloquium Committee (2 years, 1 year as Chair)  
Graduate Admissions Committee (1 year)  
Qualifying Exam Committee (1 year)
- Wisconsin: *Departmental:*  
Long Range Planning (3 years, 1 year as Chair)  
Research Capital Committee (1 year as Chair)  
Promotions Committee (6 years, 2 years as chair)  
Recognition Committee (10 years, 2 years as chair)  
Library Committee (1 year)  
Qualifying Exam Committee (1 year)  
Graduate Admissions Committee (5 years)  
New Staff Committee (12 years, two as Chair)  
Salary Committee (7 years, one as Chair)  
Ad Hoc Committee on the Future of the Department (1 year)  
Departmental Review Committee (1 year)  
Capital Exercise Committee (1 year)  
Electronics Shop Committee (1 year)  
Computing & IT Committee (8 years, 5 years as Chair)
- University:*  
Physical Sciences Lab Advisory Board (5 years).  
Undergraduate Awards and Research Committee (1 year).  
Responsive Curriculum Committee (1 year).  
Chair, Campus Committee on Research Computing (2 years)

**OUTREACH**

- July, 1992 Newspaper Column: Wisconsin State Journal.  
March, 1993 Newspaper Column: Wisconsin State Journal.  
March, 1993 Newspaper Column: New York Times.  
August, 1993 Newspaper Column: Chicago Tribune.  
August, 1993 Wisconsin Public Radio Call-in show.  
November, 1993 Wisconsin Public Radio show.  
December, 1993 Newspaper Column: Milwaukee Business Journal.  
November, 1997 WORT Radio Interview.  
April, 2005 Co-Produced "World Year of Physics/Einstein Year" Concert, Mills Hall, UW-Madison
- October, 2005 Article, CERN Courier, "Deep Inelastic Scattering"  
September, 2008 Television & Newspaper Interviews on LHC Startup  
March, 2009 Public Lecture (to be given): The LHC, Full Speed Ahead After 50 Event, Monona Terrace, Madison.

**THESIS STUDENTS**

*Present thesis students who have not graduated listed by \*  
Students with Prof. Don Reeder as official advisor listed with †.*

Name	Degree	Year	Current Post	Current Institution
Christos Lazaridis	*	*	Research Asst.	U. Wisconsin (CMS)
Kira Grogg	*	*	Research Asst.	U. Wisconsin (CMS)
Mike Weinberg	*	*	Research Asst.	U. Wisconsin (CMS)
Jessica Leonard	*	*	Research Asst.	U. Wisconsin (CMS)
Homer Wolfe	Ph.D.	2008	Post Doc	Ohio State U. (CDF & CMS)
Erik Brownson	Ph.D.	2008	Post Doc	Vanderbilt U. (CMS)
Tom Danielson	Ph.D.	2007	Post Doc	UC Santa Barbara (CMS)
Adam Everett	Ph.D.	2006	Post Doc	Purdue (CMS)
Pat Ryan	Ph.D.	2006	Post Doc	Michigan State (ATLAS)
Michele Rosin	Ph.D.	2006	Post Doc	U. Glasgow (ZEUS)
Liang Li	Ph.D.	2005	Post Doc	U.C. Riverside (D0)
Sabine Lammers	Ph.D.	2004	Asst. Professor	U. Indiana (D0 & ATLAS)
Jason Breitweg	Ph.D.	2001	Software Engr.	EssNet Deutschland GmbH
Douglas Chapin	Ph.D.	2001	Post Doc	Brown University (D0)
Richard Cross	Ph.D.	2001	Software Engr.	Bank of America
Sean Mattingly	Ph.D.	1999	Post Doc	Brown University (D0)
Michael Wodarczyk	Ph.D.	1999	Yield Engineer	Intel Corporation
Anthony Vaiciulis	Ph.D.	1999	Post Doc	University of Rochester (CDF)
Timothy Kinnel	Ph.D.	1998	Information Mgr	Pragmatic Vision Int'l
Haibo Zhang	Ph.D.	1998	Engineer	Caterpillar Corporation
Sam Silverstein <sup>†</sup>	Ph.D.	1996	Assoc. Professor	Stockholm University (ATLAS)
Bruce Behrens <sup>†</sup>	Ph.D.	1995	Research Analyst	Center for Naval Analyses
Issam Ali	Ph.D.	1995	Professor	University of Oman
Anna Goussiou	Ph.D.	1995	Assoc. Professor	U. Washington (D0 & ATLAS)
Pamela Sandler	Ph.D.	1992		

**U. WISCONSIN PHD THESIS COMMITTEES***(after 1992)*

Name	Advisor	Year	Name	Advisor	Year
Chen, Xin	Wu	2008	Braun, Jim	Karle	2009
Quale, Bill	Wu	2008	Fang, Yaquan	Wu	2008
Kutter, Paul	Wu	2006	Stradling, Alden	Wu	2008
Mihalyi, Attila	Wu	2005	Loureiro, Karina	Wu	2006
Ping, Huican	Erwin	2005	Datta, Mousumi	Wu	2005
Cheng, Baosen	Wu	2005	Yu, Zhitang	Wu	2005
Liu, Ran	Wu	2004	Wu, Jinwei	Wu	2004
McNamara, Peter	Wu	2002	Charles, Eric	Wu	2002
Ferguson, Douglas Paul	Wu	2001	Nielsen, Jason	Wu	2001
Ha, Phuoc Dai	Durand	1999	Wu, Xidong	Wu	2000
Rainwater, David	Zeppenfeld	1999	Greening, Thomas	Wu	1999
Armstrong, Stephen	Wu	1998	Alavi-Harati, Ashkan	Erwin	1999
Olsen, James	Carlsmith	1998	Elmer, Peter	Wu	1998
Grahl, James	Wu	1998	Orejudos, William	Wu	1998
Gao, Yong-Sheng	Wu	1995	Nachtman, Jane	Wu	1997
Bellantoni, Leo	Wu	1995	Feng, Zhong	Wu	1995
Riesselmann, Kurt	Durand, L	1994	Walsh, Arthur Michael	Wu	1994
Duff, Adam	Zeppenfeld	1993	Weber, Frederick	Reeder	1993

**Ph.D. Thesis Titles of Thesis Students**

Student	Year	Title
1. Homer Wolfe	2008	Multijet Production in Charged Current Deep Inelastic Scattering with ZEUS at HERA
2. Eric Brownson	2008	Prompt Photons in Photoproduction and Deep Inelastic Scattering at HERA
3. Tom Danielson	2007	A Measurement of Multijet Production in Low- $x_{Bj}$ Neutral Current Deep Inelastic Scattering with ZEUS at HERA
4. Pat Ryan	2006	Photoproduction of Events with rapidity gaps Between Jets with ZEUS at HERA
5. Adam Everett	2006	Measurements of Event shapes in Deep Inelastic Scattering with ZEUS at HERA
6. Michele Rosin	2006	Energy Dependence of the Mean Charged Multiplicity in Deep Inelastic Scattering with ZEUS at HERA
7. Liang Li	2005	Three-Jet Production in Neutral Current Deep Inelastic Scattering with ZEUS at HERA
8. Sabine Lammers	2004	A Study of Parton Dynamics at Low $x$ with ZEUS at HERA
9. Jason Breitweg	2001	Neutral Current Deep Inelastic Scattering at Large Momentum transfer with ZEUS at HERA
10. Douglas Chapin	2001	A Measurement of Dijet Production in Neutral Current Deep Inelastic Scattering with HERA at ZEUS.
11. Richard Cross	2001	A Measurement of the Total Photon-Photon Cross Section at ZEUS
12. Sean Mattingly	1999	Virtual Photon Structure with ZEUS at HERA
13. Michael Wodarczyk	1999	Measurement of the $F_2$ Structure Function of the Proton at HERA from 1996 and 1997 ZEUS Data
14. Anthony Vaiciulis	1999	Observation of Isolated High- $E_T$ Photons in Photoproduction at HERA
15. Timothy Kinnel	1998	Hadronic Energy Flow in Charged Current Neutrino Scattering
16. Haibo Zhang	1998	Measurement of the Positron-Proton Neutral Current Deep Inelastic Scattering Double Differential Cross Section at High $Q^2$
17. Sam Silverstein	1996	A Search for Non-Resonant Effects of Leptoquarks in Electron-Proton Collisions
18. Bruce Behrens	1995	Study of the Photon Remnant in Resolved Photoproduction at HERA
19. Issam Ali	1995	Measurement of Neutral and Charged Current Deep Inelastic Scattering Cross Sections at Very High $Q^2$
20. Anna Goussiou	1995	Measurement of the Proton Structure Function $F_2$ and Extraction of the Gluon Density of the Proton at Low $x$ using the ZEUS Detector at HERA
21. Pamela Sandler	1992	Neutrino Production of Same Sign Dimuons at the Fermilab Tevatron

**Postgraduate-Scholars**

Name	Position	Years	Current Post	Current Institution
Jonathan Efron	Postdoc	2007-pres.	Postdoc	U. Wisconsin
Monika Grothe	Asst. Scientist	2003-pres.	Asst. Scientist	U. Wisconsin
Armando Lanaro	Asst. Scientist	2003-pres.	Asst. Scientist	U. Wisconsin
Yongwook Baek	Postdoc	2003-2007	Asst. Scientist	Kangnung National U.
Pamela Chumney	Asst. Scientist	2000-pres.	Assoc. Scientist	U. Wisconsin
Alexandre Savin	Postdoc	2000-pres.	Assoc. Scientist	U. Wisconsin
Dorian Kcira	Postdoc	2000-2005	Postdoc	U. Wisconsin
Costas Foudas	Postdoc	1989-2000	Assoc. Professor	Imperial College-London
Sridhara Dasu	Postdoc	1992-2000	Assoc. Professor	University of Wisconsin
Torsten Wildschek	Postdoc	1998-2000	Scientist	Lucent Technologies
William Badgett	Postdoc	1994-1999	Scientist	Fermilab
Carrie Fordham	Postdoc	1991-1993	Deceased	

**External Examiner on Ph. D. Thesis Exam**

Student	University	Date
Emlyn Corrin	Imperial College, London, UK	2003
Monica Vasquez	University of Madrid, Spain	2003
Nils Krumnack	Hamburg University, Germany	2004
Stefanos Dris	Imperial College, London, UK	2006
Ildefons Magrans	University of Barcelona, Spain	2008

## Refereed Publications

*38 of the following papers with more than 100 citations noted by \*.*

1. A Search for New Massive Particles, L.M. Lederman *et al.*, Phys. Lett. **77B**, 344 (1978).
2. Observation of  $J/\psi$  (3100) Production by 209 GeV Muons, A.R. Clark *et al.*, Phys. Rev. Lett. **43**, 187 (1979).
3. Cross Section Measurements for Charm Production by Muons and Photons, A.R. Clark *et al.*, Phys. Rev. Lett. **45**, 686 (1980).
4. Limit on T Muoproduction at 209 GeV, A.R. Clark *et al.*, Phys. Rev. Lett. **45**, 686 (1980).
5. Measurement of the Charm Structure Function and its Role in Scale Noninvariance, A.R. Clark *et al.*, Phys. Rev. Lett. **45**, 1465 (1980).
6. Polarization of Muoproduced  $J/\psi$  (3100), A.R. Clark *et al.*, Phys. Rev. Lett. **46**, 2092 (1980).
7. Lower Limit on Neutral Heavy Muon Mass, A.R. Clark *et al.*, Phys. Rev. Lett. **46**, 299 (1981).
8. Charm Production by Muons and Its Role in Scale Noninvariance, G.D. Gollin *et al.*, Phys. Rev. **D24**, 559 (1981).
9. Study of Rare Processes Induced by 209-GeV Muons, W.H. Smith *et al.*, Phys. Rev. **D25**, 2762 (1982).
10. Measurement of the Nucleon Structure Function in Iron Using 215-GeV and 93-GeV Muons, A.R. Clark *et al.*, Phys. Rev. Lett. **51**, 1826 (1983).
11. Limits on Muon Neutrino Oscillations in the Mass Range  $55 \text{ eV}^2 < \Delta m^2 < 800 \text{ eV}^2$ , I.E. Stockdale *et al.*, Phys. Rev. Lett. **52**, 1384 (1984). \*
12. Nucleon Structure Functions from High Energy Neutrino Interactions with Iron and QCD Results, D. MacFarlane *et al.*, Z. Phys. **C26**, 1 (1984).
13. Search for Muon Neutrino and Antineutrino Oscillations in the Mass Range  $15 < \Delta m^2 < 1000 \text{ eV}^2 / c^4$ , I.E. Stockdale *et al.*, Z. Phys. **C27**, 53 (1985).
14. Hadron Shower Punchthrough for Incident Hadrons of Momentum 15, 25, 50, 100, 200, 300 GeV/c, F.S. Merritt *et al.*, Nucl. Inst. Meth. **A245**:27 (1986).
15. Measurement of the Nucleon Structure Function using 215 GeV and 93 GeV Muons, P.D. Meyers *et al.*, Phys. Rev. **D34**, 1265 (1986).
16. Neutrino Production of Dimuons, K. Lang *et al.*, Z. Phys. **C33**, 483 (1987).
17. A Search for Neutral Heavy Leptons in  $\nu_\mu$ -N Interactions, S.R. Mishra *et al.*, Phys. Rev. Lett. **59**, 1397 (1987).
18. Neutrino Production of Same Sign Dimuons, B.A. Schumm *et al.*, Phys. Rev. Lett. **60**, 1618 (1988).
19. Inverse Muon Decay and Neutrino Dimuon Production at the Tevatron, S.R. Mishra *et al.*, Phys. Rev. Lett. **63**, 132 (1989).

20. A Study of Wrong Sign Single Muon Production  $\nu_{\mu}$ -N Interactions, S.R. Mishra *et al.*, *Z. Phys.* **C44**, 187 (1989).
21. Neutrino Production of Opposite Sign Dimuons at Tevatron Energies, C. Foudas *et al.*, *Phys. Rev. Lett.* **64**, 1207 (1990). \*
22. A Measurement of the Neutral Current Electroweak Parameter Using the Fermilab Narrow Band Neutrino Beam, F.S. Merritt *et al.*, *Z. Phys.* **C45**, 539 (1990).
23. Hadron Shower Penetration and Muon Production by Hadrons at 40, 70 and 100 GeV, P.H. Sandler *et al.*, *Phys. Rev.* **D42**, 759 (1990).
24. Measurement of the Inclusive Charged Current Cross-Section for Neutrino and Antineutrino Scattering on Isoscalar Nucleons, P.S. Auchincloss *et al.*, *Z. Phys.* **C48** 411 (1990).
25. Calibration of the CCFR Target Calorimeter, W.K. Sakumoto *et al.*, *Nucl. Inst. and Meth.* **A294**, 179 (1990).
26. Inverse Muon Decay,  $\nu_{\mu} + e \rightarrow \mu^{-} + \nu_e$ , at the Fermilab Tevatron, S. R. Mishra *et al.*, *Phys. Lett.* **B252**, 170 (1990).
27. First Level Processor for the Zeus Calorimeter, J.W. Dawson *et al.*, *IEEE Transactions on Nuclear Science*, **37**, 2198 (1990).
28. Measuring Muon Momenta with the CCFR Neutrino Detector, B. J. King *et al.*, *Nucl. Inst. Meth.* **A302** 254 (1991).
29. Neutrino Tridents and W-Z Interference, S.R. Mishra *et al.*, *Phys. Rev. Lett.*, **66**, 3117 (1991).
30. Deciphering the quark-gluon structure of high energy photons using a tagged photon beam at HERA, R.S. Fletcher, F. Halzen, S. Keller, W.H. Smith, *Phys. Lett.* **B266**, 183 (1991).
31. A Measurement of TeV Muon Energy Loss in Iron, W.K. Sakumoto *et al.*, *Phys. Rev.* **D45**, 3042 (1991).
32. A Search for Right-handed Coupling in  $\nu$ -N Scattering, S. R. Mishra *et al.*, *Phys. Rev. Lett.* **68**, 3499 (1992).
33. Nucleon Structure Functions from High Energy Neutrino Interactions with Iron using a Narrow Band Beam, E. Oltman *et al.*, *Z. Phys.* **C53**, 51 (1992).
34. Design and Implementation of a High Precision Readout System for the Zeus Calorimeter, A. Caldwell *et al.*, *Nucl. Inst. Meth.* **A321**, 356 (1992). \*
35. A Superconducting Supercollider Calorimeter Photomultiplier Tube Preamplifier Circuit, D. Panescu, J. Lackey, P. Robl, and W. H. Smith, *Nucl. Inst. Meth.* **A317**, 567 (1992).
36. A Measurement of  $\sigma_{\text{tot}}(\gamma p)$  at  $\sqrt{s} = 210$  GeV, M. Derrick *et al.*, *Phys. Lett.* **B 293**, 465 (1992). \*
37. Observation of hard scattering in photoproduction at HERA, M. Derrick *et al.*, *Phys. Lett.* **B 297**, 404 (1992). \*

38. Neutrino Production of Same Sign Dimuons at the Fermilab Tevatron, P. H. Sandler *et al.* *Z. Phys.* **C57** 1, 1993.
39. A Measurement of the Gross-Llewellyn-Smith Sum Rule from the CCFR  $xF_3$  Structure Function, W.C. Leung *et al.*, *Phys. Lett.* **B317** 655, 1993. \*
40. A Measurement of  $\Lambda_{MS}$  from  $\nu_\mu$ -Fe Structure Functions at the Fermilab Tevatron, P.Z. Quintas *et al.*, *Phys. Rev. Lett.* **71** 1307, 1993. \*
41. Measurement of the Strange Sea Distribution Using Neutrino Charm Production, S. A. Rabinowitz *et al.*, *Phys. Rev. Lett.* **70**, 134 (1993). \*
42. Initial Study of Deep Inelastic Scattering with ZEUS at HERA, M. Derrick *et al.*, *Phys. Lett.* **B303** 183, 1993.
43. A Fast Pipelined VLSI Adder for Fast Trigger Decisions at the Superconducting Super Collider, D. Panescu *et al.*, *Nucl. Inst. and Meth.*, **A330**, 475 (1993).
44. A Fast Pipelined CORDIC-Based Adaptive Lattice Predictor: Algorithms and Architecture, D. Panescu *et al.*, *IEEE Transactions on Signal Processing*, **41**, 1993.
45. Beam Test of the ZEUS Barrel Calorimeter, A. Bernstein *et al.*, *Nucl. Inst. and Meth.*, **A336**, 23, 1993. \*
46. Search for Leptoquarks with the ZEUS Detector, M. Derrick *et al.*, *Phys. Lett.* **B306** 173, 1993.
47. Observation of Two Jet Production in Deep Inelastic Scattering at HERA, M. Derrick *et al.*, *Phys. Lett.* **B306** 158, 1993.
48. Hadronic Energy Distributions in Deep Inelastic Electron - Proton Scattering, M. Derrick *et al.*, *Z. Phys.* **C59** 231, 1993.
49. A Search for Excited Electrons using the ZEUS Detector, M. Derrick *et al.*, *Phys. Lett.* **B316** 207, 1993.
50. Observation of Events with a Large Rapidity Gap in Deep Inelastic Scattering at HERA, M. Derrick *et al.*, *Phys. Lett.* **B315** 481, 1993. \*
51. Measurement of the Proton Structure Function  $F_2$  in  $ep$  Scattering at HERA, M. Derrick *et al.*, *Phys. Lett.* **B316** 412, 1993. \*
52. Observation of Direct Processes in Photoproduction at HERA, M. Derrick *et al.*, *Phys. Lett.* **B322** 287, 1994. \*
53. Hadron Shower Energy and Direction Measurements Using Drift Chambers, T.S.Kinnel *et al.*, *Nucl. Inst. and Meth.* **A340** 474, 1994.
54. A study of the Energy Dependence of the Mean, Truncated Mean, and Most Probable Energy Deposition of High Energy Muons in Sampling Calorimeters, P. Auchincloss *et al.*, *Nucl. Inst. and Meth.* **A343** 463, 1994.
55. A Precise Measurement of the Weak Mixing Angle in Neutrino Nucleon Scattering, C.G. Arroyo *et al.*, *Phys. Rev. Lett.* **72**3452, 1994.

56. Measurement of Total and Partial Photon Proton Cross-Sections at 180-GeV Center-of-Mass Energy, M. Derrick *et al.*, *Z. Phys.* **C63** 391, 1994. \*
57. Observation of Jet Production in Deep Inelastic Scattering with a Large Rapidity Gap at HERA, M. Derrick *et al.*, *Phys. Lett.* **B332** 228, 1994. \*
58. Comparison of Energy Flows in Deep Inelastic Scattering Events with and without a Large Rapidity Gap, M. Derrick *et al.*, *Phys. Lett.* **B338** 483, 1994.
59. Measurement of the Proton Structure Function  $F_2$  from the 1993 HERA Data, M. Derrick *et al.*, *Z. Phys.* **C65** 379, 1995. \*
60. Determination of the Strange Quark Content of the Nucleon from a Next-to-Leading Order QCD Analysis of Neutrino Charm Production, A.O. Bazarko *et al.*, *Z. Phys.* **C65** 189, 1995.\*
61. The ZEUS Calorimeter First Level Trigger, W. H. Smith *et al.*, *Nucl. Inst. Meth.* **A355** 278, 1995.
62. Observation of Hard Scattering in Photoproduction Events with a Large Rapidity Gap at HERA, M. Derrick *et al.*, *Phys. Lett.* **B346**, 339, 1995.
63. Extraction of the Gluon Density of the Proton at Small  $x$ , M. Derrick *et al.*, *Phys. Lett.* **B345** 576, 1995. \*
64. Inclusive Jet Differential Cross Sections in Photoproduction at HERA, M. Derrick *et al.*, *Phys. Lett.* **B342** 417, 1995.
65. A Search for Excited Fermions in Electron-Proton Collisions at HERA, M. Derrick *et al.*, *Z. Phys.* **C65** 627, 1995.
66. Study of  $D^*(2010)^-$  Production in  $ep$  Collisions at HERA, M. Derrick *et al.*, *Phys. Lett.* **B349** 225, 1995.
67. Jet Production in High  $Q^2$  Deep-Inelastic Scattering at HERA, M. Derrick *et al.*, *Z. Phys.* **C67** 81, 1995.
68. Measurement of Multiplicity and Momentum Spectra in the Current Fragmentation Region of the Breit Frame at HERA, M. Derrick *et al.*, *Z. Phys.* **C67** 93, 1995.
69. Dijet Cross Sections in Photoproduction at HERA, M. Derrick *et al.*, *Phys. Lett.* **B348** 665, 1995. \*
70. Extraction of the Gluon Density of the Proton at Small  $x$ , M. Derrick *et al.* *Phys. Lett.* **B345** 576, 1995. \*
71. Inclusive Transverse Momentum Distributions of Charged Particles in Diffractive and Non-Diffractive Photoproduction at HERA, M. Derrick *et al.* *Z. Phys.* **C67** 227, 1995.
72. Measurement of the Cross Section for the Reaction  $\gamma \rightarrow J/\psi p$  with the ZEUS Detector at HERA, M. Derrick *et al.* *Phys. Lett.* **B350** 120, 1995. \*
73. Measurement of Charged and Neutral Current e-p Deep Inelastic Scattering Cross Sections at High  $Q^2$ , M. Derrick *et al.* *Phys. Rev. Lett.* **75** 1006, 1995.

74. Study of the Photon Remnant in Resolved Photoproduction at HERA, M. Derrick *et al.* Phys. Lett. **B354** 163, 1995.
75. Neutral Strange Particle Production in Deep Inelastic Scattering at HERA, M. Derrick *et al.* Z. Phys. **C68** 29, 1995.
76. Measurement of the Diffractive Structure Function in Deep Inelastic Scattering at HERA, M. Derrick *et al.* Z. Phys. **C68** 569, 1995. \*
77. Diffractive Hard Photoproduction at HERA and Evidence for the Gluon Content of the Pomeron, M. Derrick *et al.*, Phys. Lett. **B356** 129, 1995. \*
78. Exclusive  $\rho^0$  Production in Deep Inelastic Electron-Proton Scattering at HERA, M. Derrick *et al.*, Phys. Lett. **B356** 601, 1995. \*
79. The Zeus Calorimeter First Level Trigger, S. Silverstein, *et al.*, Nucl. Instrum. Meth. **A360** 322, 1995
80. Limits on  $\nu_\mu(\nu_\mu) \rightarrow \nu_i(\nu_i)$  and  $\nu_\mu(\nu_\mu) \rightarrow \nu_e(\nu_e)$  Oscillations from a Precision Measurement of Neutrino-Nucleon Neutral Current Interactions, K.S. McFarland *et al.*, Phys. Rev. Lett. **75** 3993, 1995.
81. Measurement of  $\alpha_s$  from Jet Rates in Deep Inelastic Scattering at HERA, M. Derrick *et al.*, Phys. Lett. **B363** 201, 1995.
82. Measurement of Elastic  $\rho^0$  Photoproduction at HERA M. Derrick *et al.*, Z. Phys. **C69** 39, 1995. \*
83. Measurement of the Proton Structure Function  $F_2$  at low  $x$  and low  $Q^2$  at HERA, M. Derrick *et al.*, Z. Phys. **C69** 607, 1996. \*
84. Rapidity Gaps between Jets in Photoproduction at HERA, M. Derrick *et al.*, Phys. Lett. **B369** 55, 1996.
85. Inclusive Charged Particle Distribution in Deep Inelastic Scattering Events at HERA, M. Derrick *et al.*, Z. Phys. **C70** 1, 1996.
86. Measurement of Elastic  $\phi$ -Photoproduction at HERA, M. Derrick *et al.*, Phys. Lett. **B377** 259, 1996. \*
87. Measurement of the Diffractive Cross Section in Deep Inelastic Scattering M. Derrick *et al.*, Z. Phys. **C70** 1, 1996. \*
88. Measurement of  $\gamma^*p \rightarrow \phi p$  in Deep Inelastic Scattering at HERA, M. Derrick *et al.*, Phys. Lett. **B380** 220, 1996.
89. Measurement of the  $F_2$  structure function in deep inelastic scattering using 1994 data from the ZEUS detector at HERA, M. Derrick *et al.*, Z. Phys. **C72** 399, 1996. \*
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