

## Mitchell P. Soderberg

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### Education

Ph. D.        September, 2006. Physics, University of Michigan, Ann Arbor, MI  
M.S.         August, 2004. Physics, University of Michigan, Ann Arbor, MI  
B.S.         May, 2000. Physics, Truman State University, Kirksville, MO. *Cum Laude*.

### Experience

2010-present     Assistant Professor at Syracuse University,  
Associate Scientist at Fermi National Accelerator Laboratory  
2006-2010        Postdoctoral Research Associate at Yale University  
2001-2006        Graduate Research Assistant at the University of Michigan  
2000-2001        High school physics teacher at St. Louis Priory School in St. Louis, MO  
1996-2000        Undergraduate at Truman State University

### Collaboration/Experiment Participation

LArIAT (T1034)     member, 2012-present  
LBNE                member, 2008-present  
MicroBooNE (E974)   member, 2007-present  
ArgoNeuT (T962)    member, 2006-present  
Spokesperson, Oct. 2009 - present  
CDF                 member, 2002-2006

### Talks

14th International Workshop on Next Generation Nucleon Decay and Neutrino Detectors (NNN13)  
*Liquid Argon Detector Developments in the U.S.*  
November, 2013 Kashiwa, Japan

High Voltage in Noble Liquids Workshop  
*High Voltage in ArgoNeuT*  
November, 2013 Batavia, IL

LArTPC R&D Workshop  
*Calibrations with Muons in ArgoNeuT*  
March, 2013 Batavia, IL

International Workshop on Neutrino Factories, Super Beams, and Beta Beams (NuFACT2012)  
*Liquid Argon Detector R&D*  
July, 2012 Williamsburg, VA

36th International Conference on High Energy Physics (ICHEP2012)  
*The ArgoNeuT and MicroBooNE Experiments at Fermi National Accelerator Laboratory*  
July, 2012 Melbourne, Australia

7th International Design Study for Neutrino Factory - Plenary Meeting  
*Liquid Argon Technology for Neutrinos*  
October 17, 2011 Arlington, VA

DOE Institutional Review of Fermilab  
*Future Neutrino Physics*  
June 7, 2011 Batavia, IL

Fermilab Short Baseline Neutrino Workshop  
*The ArgoNeuT Project*  
May 12, 2011 Batavia, IL

DOE Office of Science Review of Options for Underground Science  
*Reconstruction and Simulation for LArTPCs*  
April 14, 2011 Palo Alto, CA

Recontres de Moriond Electroweak 2011  
*Neutrino Data Analysis with the ArgoNeuT Project*  
March 19, 2011 La Thuile, Italy

11th International Workshop on Next Generation Nucleon Decay and Neutrino Detectors (NNN10)  
*Liquid Argon Projects in the U.S.*  
December 15, 2010 Toyama, Japan

University of Rochester Seminar  
*Frozen in Time: Neutrino Physics with Liquid Argon Detectors*  
October 12, 2010 Rochester, NY

Fermilab Workshop on Detector R&D  
*ArgoNeuT: University/Lab R&D Experience*  
October 7, 2010 Batavia, IL

XXIV International Conference on Neutrino Physics and Astrophysics (Neutrino 2010)  
*Status of ArgoNeuT and MicroBooNE Experiments*  
*Proton Decay Searches with a Liquid Argon Detector at DUSEL (Poster)*  
June, 2010 Athens, Greece

University of Houston Colloquium  
*Frozen in Time: Neutrino Physics with Liquid Argon Detectors*  
April 6, 2010 Syracuse, NY

Syracuse University Colloquium  
*Frozen in Time: Neutrino Physics with Liquid Argon Detectors*  
March 29, 2010 Syracuse, NY

University of Virginia Colloquium  
*Entering an Era of Precision Neutrino Physics*  
February 23, 2010 Charlottesville, VA

Indiana University Seminar  
*Development of Liquid Argon Time Projection Chambers in the U.S.*  
January 25, 2010 Bloomington, IN

Rutgers University Seminar  
*Development of Liquid Argon Time Projection Chambers in the U.S.*  
November 17, 2009 Piscataway, NJ

California Institute of Technology Seminar  
*Development of Liquid Argon Time Projection Chambers in the U.S.*  
October 5, 2009 Pasadena, CA

University of Michigan Seminar  
*Development of Liquid Argon Time Projection Chambers in the U.S.*  
September 28, 2009 Ann Arbor, MI

SLAC National Accelerator Laboratory Seminar  
*Development of Liquid Argon Time Projection Chambers in the U.S.*  
September 22, 2009 Palo Alto, CA

22nd International Workshop on Weak Interactions and Neutrinos (WIN'09)  
*Future Long Baseline Experiments: Options for U.S.*  
September 16, 2009 Perugia, Italy

2009 Meeting of the Division of Particles and Fields of the  
American Physical Society (DPF 2009)  
*ArgoNeuT: A Liquid Argon Time Projection Chamber Test in the NuMI Beamline*  
July 30, 2009 Detroit, MI

Sixth International Workshop on Neutrino-Nucleus Interactions in the  
Few-GeV Region (NUINT 2009)  
*MicroBooNE: A New Liquid Argon Time Projection Chamber Experiment*  
May 20, 2009 Sitges, Spain

45th Karpacz Winter School in Theoretical Physics  
*Liquid Argon Time Projection Chambers: U.S. R&D and Physics Program*  
February 11, 2009 Łądek-Zdrój, Poland

Institut de Physique Nucléaire Seminar  
*Liquid Argon Time Projection Chambers: U.S. R&D and Physics Program*  
September 15, 2008 Orsay, France

2008 International Workshop on Next Nucleon Decay and Neutrino Detectors (NNN08)  
*Liquid Argon Time Projection Chambers: U.S. R&D*  
September 12, 2008 Paris, France

DUSEL - Progress Toward the Initial Suite of Experiments  
April 23-26, 2008 Lead, South Dakota

2008 April Meeting of the American Physical Society  
*Liquid Argon Time Projection Chambers: R&D Towards Kiloton Class Detectors*  
April 14, 2008 St. Louis, MO

Project X: 1st Workshop on Physics  
*Liquid Argon Time Projection Chambers and Project X*  
November 17, 2007 Batavia, IL

CRYODET2: A Large Liquid Argon Detector for Future Particle Physics  
June 14-15, 2007 Gran Sasso, Italy

2006 April Meeting of the American Physical Society  
*Measurement of the Cross-Section of  $W^\pm + b\bar{b}$  at CDF*  
April, 2006 Dallas, TX

2005 April Meeting of the American Physical Society  
*Measurement of the Ratio of  $\frac{\sigma_{W^\pm + b\bar{b}}}{\sigma_{W^\pm + jets}}$  in  $W^\pm + 1,2$  Jet Events at CDF*  
April 18, 2005 Tampa, FL

## Publications and Proceedings

“A study of electron recombination using highly ionizing particles in the ArgoNeuT Liquid Argon TPC.”

R. Acciarri *et al.*, Journal of Instrumentation (JINST), 2013 JINST Vol. 8 P08005

“Scientific Opportunities with the Long-Baseline Neutrino Experiment”

C. Adams *et al.*, FERMILAB-CONF-13-300 (2013) [hep-ex/1307.7335]

“Liquid Argon Time Projection Chamber Research and Development in the United States”

C. Bromberg *et al.*, FERMILAB-CONF-13-257-E (2013) [hep-ex/1307.8166]

“The ArgoNeuT Detector in the NuMI Low-Energy Beam Line at Fermilab”

C. Anderson *et al.*, Journal of Instrumentation (JINST), Vol. 7 P10019 (2012)

“Analysis of a Large Sample of Neutrino-induced Muons with the ArgoNeuT Detector.”

C. Anderson *et al.*, Journal of Instrumentation (JINST), Vol. 7 P10020 (2012)

“First Measurements of Inclusive Muon Neutrino Charged Current Differential Cross Sections on Argon”, C. Anderson *et al.*, Physical Review Letters (PRL) 108 (2012), 161802

“Liquid Argon Neutrino Detector Development at Fermilab”

Proceedings to the XXIV International Conference on Neutrino Physics and Astrophysics

M. Soderberg, Nuclear Physics B - Proceedings Supplements, Volumes 229-232, Aug.-Nov. 2012.

“Liquid-Argon Time Projection Chambers in the U.S.”

Proceedings to the 45th Winter School in Theoretical Physics in Łądek-Zdrój, Poland

M. Soderberg, e-Print Archive: arXiv:0910.3553

“MicroBooNE: A New Liquid Argon Time Projection Chamber Experiment”

Proceedings to the 6th International Workshop on Neutrino-Nucleus Interactions in the Few-GeV Region (NuINT09)

M. Soderberg, e-Print Archive: arXiv:0910.3497

“ArgoNeuT: A Liquid Argon Time Projection Chamber Test in the NuMI Beamline”

Proceedings for DPF-2009, Detroit, MI

M. Soderberg, e-Print Archive: arXiv:0910.3433

“Measurement of the b-jet Cross Section in Events with a W Boson in p-pbar Collisions at  $\sqrt{s}=1.96\text{TeV}$ ”

T. Aaltonen, *et al.*, Phys. Rev. Lett. 104.131801 (2010), e-Print Archive: arXiv:0909.1505

“A Regenerable Filter for Liquid Argon Purification”

A. Curioni *et al.*, *Nucl.Instrum.Meth.* **A605:306-311** 2009. e-Print Archive: arXiv:0903.2066

“The Yale liquid argon time projection chamber”

Alessandro Curioni, Bonnie T. Fleming, Mitchell Soderberg, e-Print Archive: arXiv:0804.0415

“The Yale Lar TPC”

Proceedings to the 5th International Workshop on Neutrino-Nucleus Interactions in the Few-GeV Region (NuINT07), AIPConf.Proc.967:76-79,2007

Alessandro Curioni, Bonnie T. Fleming, Mitchell Soderberg, e-Print Archive: arXiv:0708.0875

“Measurement of  $t\bar{t}$  production cross section in  $p\bar{p}$  collisions at  $\sqrt{s}=1.96\text{ TeV}$  using lepton + jet events with secondary vertex  $b$ -tagging”, D. Acosta *et al.*, Phys. Rev. D **71**, 052003 (2005)

## **Funding**

P.I. on 3-year NSF grant entitled, “Neutrino Physics with Liquid Argon Detectors”.

## **Other Activities**

Served as co-convenor of the Neutrino Detectors track at the 2011 Technology and Instrumentation in Particle Physics (TIPP) conference, held June 9-14, 2011 in Chicago, IL. Helped recruit and organize ~45 talks, and served as editor of the proceedings for this part of the conference.

Co-PI of the Syracuse HEP group activity in the QuarkNet program, which aims to expose local high-school physics teachers to modern research in the field of particle physics. Co-organized three week long summer workshop for local high school teachers at Syracuse University in 2012, and one week long summer workshop for these same teachers in 2013.

Presentation entitled “The Naughty Neutrino” at Syracuse University and in New York City in April 2013 for high school teachers participating in Syracuse University Project Advance (SUPA) physics program.

Presentation entitled “Finding Higgs” to four different classes at Fayetteville-Manlius High School physics students in May 2013. Teachers of these classes are QuarkNet participants.

## **Awards**

“Dinner on the Department” Teaching Award, Large Enrollment Course (PHY212), Spring 2013

“Lunch on the Department” Teaching Award, Small Enrollment Course (PHY361), Spring 2012

Regents Fellowship, University of Michigan, 2001-2003

Departmental Honors in Physics, Truman State University, May 2000

Outstanding Senior in Physics, Truman State University, May 2000

Elected to Sigma Pi Sigma, the National Physics Honor Society, 1999

## **Membership**

Fermilab Users’ Executive Committee, 2007-2009

Fermilab Users’ Executive Committee Secretary, 2008-2009