L. GLADSTONE

CURRICULUM VITAE

CONTACT INFORMATION

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EDUCATION

Ph. D. (Physics) expected 2014
University of Wisconsin-Madison
Thesis: *A Measurement of the Neutrino Mixing Angle θ_{23} using the IceCube DeepCore Detector*
Adviser: Albrecht Karle

M. S. (Physics) 2010
University of Wisconsin-Madison
Adviser: Albrecht Karle

B. A. (Physics, concentration Mathematics) 2007
Columbia College, Columbia University
Thesis: *Understanding neutrino oscillations with the MiniBooNE experiment: photomultiplier tube testing and delta radiative decays*
Adviser: Janet Conrad

PROFESSIONAL APPOINTMENTS

Graduate Research Assistant
University of Wisconsin-Madison, Madison, Wisconsin 2010 to present

Graduate Fellow
University of Wisconsin-Madison, Madison, Wisconsin 2007-2010

Undergraduate Research Assistant
Columbia University, New York, NY / *Fermilab*, Batavia, IL 2004-2007

RESEARCH EXPERIENCE

IceCube Neutrino Observatory

- Developed an event selection for oscillation analysis that excluded the background of down-going cosmic ray muons while preserving a sample of atmospheric neutrinos with energies of order 10 GeV, from the year of data with the 79-string detector setup.
- Wrote software for Feldman-Cousins error contours, useful for any oscillation analysis, diffuse neutrino spectrum analysis, or unbinned point source analysis.
- Search for the shadow of the Moon in down-going cosmic ray muons in the 22- and 40-string detector setups: found the first signal stronger than 3σ in IceCube from the Moon.
- Tested the main detector components, Digital Optical Modules (DOMs), during production, including testing on-site during one South Polar season.
- Tested high quantum efficiency DOMs, investigating temperature dependence of the dark noise rate.
- Validated the low-energy data stream at the commencement of the 79-string detector setup.
- Represented the Low Energy working group to simulation production committee, March 2013.
- IceCube remote monitoring shifts: led Madison team for 9 weeks 2009, ran a two-week shift 2011, ran a one-week shift 2008.
- Reviewed code of IceCube internal software project "genie-icetray"

MiniBooNE

- Tested photomultiplier tubes to characterize the angular dependence of light acceptance.
- Coordinated, edited, and submitted the MiniBooNE photomultiplier tube paper.
- Developed a boosted decision tree-based event selection to eliminate the background of delta radiative decays.
- Control room shifts (FNAL): July 2004; Jan, Jun, Jul 2005; Jan, Jun, Jul 2006.

AWARDS

- *DoD Fellowship* Department of Defense, Air Force Office of Scientific Research, National Defense Science and Engineering Graduate Fellowship, 2007-2010. 32 CFR 168a.
- *APS District Advocate* awarded February 2014 for outstanding contributions to advocacy relating the federal government shutdown in 2013.

- *Hirschfelder* Elizabeth S. Hirschfelder Endowment for Physics, Wisconsin Physics Department 2008, 2009.
- *Firminhac* Henry & Eleanor Firminhac Physics Scholarship, Wisconsin Physics Department 2007.
- *Van Vleck* Physics Scholarship, Wisconsin Physics Department 2007.
- *AWIS* Kirsten R. Lorentzen Award, Association of Women in Science Educational Foundation, Jan 2007.
- *REU 2005, 2006* National Science Foundation Research Experience for Undergraduates through Columbia University, to work on MiniBooNE at Fermilab with Prof. Janet Conrad.
- *REU 2004* National Science Foundation Research Experience for Undergraduates through University of Michigan, to work on MiniBooNE at Fermilab with Prof. Byron Roe.
- *SWE* Society of Women Engineers Award for Outstanding Woman in Math and Science, 2003.

Teaching Experience

Tutor 2006-2008
Private clients, high school, New York, NY
Private clients, college introductory physics pre-calculus, Madison, WI

Grader with Office Hours - Physics C1001x, C1002y (Physics for Poets I&II) 2006 to 2007
Columbia University, New York, NY

Professional Service

Academic memberships
- American Physical Society. 2005 to present.
- Association of Women in Science. 2007 to present.
- IceCube Neutrino Observatory Collaboration. 2008 to present.

Peer Organizing
- IceCube collaboration new student training, presenter and organizing committee member, summers 2010-2013.
- Physics Department Panel Discussion on Resumé and CV writing, organizer, September 2010.
- Physics Department Admitted Students Weekend, Graduate Student Coordinator, Madison, Spring 2009.
- Society of Physics Students (Columbia University). President 2006-2007, Secretary 2005-2006, Webmaster 2004-2005, member 2003-2007.

Outreach and educational activities

Blogging
- Quantum Diaries. Twice-monthly contributor, May 2014 - present.
- IceCube Travel Blogger. 2009-2010 polar season.

Bringing the Universe to Wisconsin IceCube speakers visit each campus in the UW system, arranging an on-campus and off-campus event at each.
- Marshfield, Wisconsin (October 2013) Main evening speaker; co-teacher for youth workshop.
- Eau Claire, Wisconsin (April 2014). General Physics Department presenter; co-hosting a screening of the IceCube planetarium movie "Chasing the Ghost Particle".

Podcast
- Guest on the "Titanium Physicists" podcast, April 2012.

Girls' Science Conferences
- *Expanding Your Horizons*. Session presenter at this conference for middle-school girls. November 2007, 2008, 2011, 2012. Madison.
- *Discovery Why*. Girl Scouts Black Hawk Council, Physics presenter, 2008, Madison.

Primary School Visits
- *WICATY*. Presentation at Wisconsin Center for Academically Talented Youth, a middle school enrichment program. Cambridge, Wisconsin, December 2011.

- *Van Hise Elementary School*. Afternoon-long presentation and activities with a 3rd grad class. Madison, Wisconsin, June 2010.

Campus Science Fair Booths
- *Wisconsin Science Festival 2012*. IceCube booth presenter. Madison. September 2012.
- *Physics Fair*. Department of Physics. University of Wisconsin-Madison. February 2008, 2009, 2010.

Club Meeting Speaker. Invited speaker at a monthly business meeting.
- Rector's Guild of Grace Episcopal Church, Madison, January 2014;
- P.E.O. Chapter BL, Madison, October 2010.

Conference Presentations

Invited talks

- *The Shadow of the Moon in Cosmic Ray Muons*
  Mediterranean-Antarctic Neutrino Telescope Symposium, (MANTS 2010) Paris, France.
- *The Shadow of the Moon in Cosmic Ray Muons*
  Mediterranean-Antarctic Neutrino Telescope Symposium, (MANTS 2009) Berlin, Germany.

Contributed talks

- *Measuring θ_{23} with IceCube DeepCore*
  American Physical Society - April Meeting 2013, Denver, Colorado.
- *The Shadow of the Moon in IceCube*
  Young Scientist Forum, Rencontres de Moriond Electroweak 2010, La Thuile, Italy.
- *Observation of the Moon Shadow in the IceCube 40-string detector configuration*
  American Physical Society - April Meeting 2009, Denver, Colorado.
- *Delta Radiative Decay in the MiniBooNE Experiment*
  American Physical Society - April Meeting 2006, Dallas, Texas.
- *Photomultiplier tube testing in the MiniBooNE experiment*
  American Physical Society - April Meeting 2005, Tampa, Florida.

Posters

- *The Moon Shadow in IceCube*
  Cosmo08 - 2008, Madison, Wisconsin.
- *Delta Radiative Decay in the MiniBooNE Experiment*
  American Physical Society - April Meeting 2006 Dallas, Texas.

Publications

Major Contributions

1. IceCube Collaboration, "Measurement of Atmospheric Neutrino Oscillations with IceCube", PRL **111** (2013) 081801, (arXiv:1305.3909)
2. IceCube Collaboration, "Observation of the Cosmic-Ray Shadow of the Moon with IceCube", PR **D** (2013, in press) (arXiv:1305.6811).
3. S.J. Brice et al. "Photomultiplier tubes in the MiniBooNE experiment", NIM **A562** (2006) 97-109 (arXiv:1005.3525).

Conference proceedings

1. S. Euler, L. Gladstone, and C. Wiebusch for the IceCube Collaboration, "Measurement of Atmospheric Neutrino Oscillations with IceCube/DeepCore in its 79-string Configuration", 33rd International Cosmic Ray Conference (ICRC 13), Rio de Janeiro, Brazil (July 2013), Paper No. 0848, (arXiv:1309.7008).
2. L. Gladstone for the IceCube Collaboration, "The Shadow of the Moon in IceCube", Proceedings of the XLVI Rencontres de Moriond, International Conference on Electroweak Interactions and Unified Theories, La Thuile, Italy, Mar. 20-27, 2011 (arXiv:1111.2969).
3. D.J. Boersma, L. Gladstone, A. Karle, for the IceCube Collaboration, "Moon Shadow Observation by IceCube", 31st International Cosmic Ray Conference (ICRC 09), Lodz, Poland (June 2009), Paper No. 1173, (arXiv:1002.4900).

Publications as a member of the IceCube Collaboration

1. IceCube Collaboration, "Search for Non-Relativistic Magnetic Monopoles with IceCube" submitted to The European Physical Journal **C**, e-print 14 February 2014, (arXiv:1402.3460)
2. IceCube Collaboration, "Search for Neutrino-Induced Particle Showers with IceCube-40", accepted for publication in PR**D**, 2 March 2014, e-print (arXiv:1312.0104).

3. IceCube Collaboration, "The IceProd Framework: Distributed Data Processing for the IceCube Neutrino Observatory", submitted to Journal of Parallel and Distributed Computing, e-print 22 November 2013 (arXiv:1311.5904).

4. IceCube Collaboration, "Observation of the Cosmic-Ray Shadow of the Moon with IceCube", submitted to PR**D**, e-print 29 May 2013, (arXiv:1305.6811).

5. IceCube Collaboration, "Search for a Diffuse Flux of Astrophysical Muon Neutrinos with the IceCube 59-string Configuration", Phys Rev **D**89 (2014) 062007, 25 March 2014 (arXiv:1311.7048).

6. IceCube Collaboration, "Energy Reconstruction Methods in the IceCube Neutrino Telescope" Journal of Instrumentation **9** (2014) P03009, March 2014 (arXiv:1311.4767).

7. IceCube Collaboration, "Improvement in Fast Particle Track Reconstruction with Robust Statistics" NIM **A736** 143-149, 1 February 2014 (arXiv:1308.5501).

8. IceCube-PINGU Collaboration, "Letter of Intent: The Precision IceCube Next Generation Upgrade (PINGU)" e-print 9 January 2014 (arXiv:1401.2046).

9. IceCube Collaboration, "Search for Time-Independent Neutrino Emission from Astrophysical Sources with 3 years of IceCube Data", ApJ **779** 132, 20 December 2013 (arXiv:1307.6669).

10. IceCube Collaboration, "Probing the Origin of Cosmic-Rays with Extremely High Energy Neutrinos Using the IceCube Observatory", Phys Rev **D88** 112008, 16 December 2013 (arXiv:1310.5477).

11. IceCube Collaboration, "An IceCube Search for Dark Matter Annihilation in Nearby Galaxies and Galaxy Clusters" Phys Rev **D88** 122001, 6 December 2013 (arXiv:1307.3473).

12. IceCube Collaboration, "Evidence for High-Energy Extraterrestrial Neutrinos at the IceCube Detector", Science **342** (2013) 1242856, 22 November 2013 (arXiv:1311.5238).

13. IceCube Collaboration, "South Pole Glacial Climate Reconstruction from Multi-Borehole Laser Particulate Stratigraphy", Journal of Glaciology **59** (2013) 1117-1128, October 2013.

14. IceCube Collaboration, "Measurement of the Cosmic Ray Energy Spectrum with IceTop-73", Phys Rev **D88** (2013) 042004, 28 August 2013 (arXiv:1307.3795).

15. IceCube Collaboration, "First observation of PeV-energy neutrinos with IceCube", Phys Rev Letters **111** 021103, 8 July 2013 (arXiv:1304.5356)

16. IceCube Collaboration, "Measurement of South Pole ice transparency with the IceCube LED calibration system", NIM **A711** (2013) 73-89, (arXiv:1301.5361)

17. IceCube Collaboration, "Measurement of the Atmospheric ν_e Flux in IceCube", Phys Rev Letters **110** (2013) 151105, 10 April 2013 (arXiv:1212.4760).

18. IceCube Collaboration, "All-Particle Cosmic Ray Energy Spectrum Measured with 26 IceTop stations", Astroparticle Physics **44** (2013) 40-58, April 2013 (arXiv:1202.3039)

19. IceCube Collaboration, "Search for Dark Matter Annihilations in the Sun with the 79-string IceCube Detector", Phys Rev Letters **110** (2013) 131302, 28 March 2013 (arXiv:1212.4097)

20. IceCube Collaboration, "Search for Galactic PeV Gamma Rays with the IceCube Neutrino Observatory", Phys Rev **D87** (2013) 062002, 20 March 2013 (arXiv:1210.7992)

21. IceCube Collaboration, "An improved method for measuring muon energy using the truncated mean of dE/dx", NIM **A703** (2013) 190-198, 1 March 2013 (arXiv:1208.3430).

22. IceCube Collaboration, "Observation of Cosmic Ray Anisotropy with the IceTop Air Shower Array" ApJ **765** (2013) 55, 1 March 2013 (arXiv:1210.5278).

23. IceCube Collaboration, "IceTop: The Surface Component of IceCube", NIM **A700** (2013) 188-220, 1 February 2013, 2012 (arXiv:1207.6326).

24. IceCube Collaboration, "Cosmic Ray Composition and Energy Spectrum from 1-30 PeV Using the 40-String Configuration of IceTop and IceCube", Astroparticle Physics **42** (2013) 15-32, February 2013 (arXiv:1207.3455).

25. IceCube Collaboration, "Searches for high-energy neutrino emission in the Galaxy with the combined IceCube-AMANDA detector", ApJ **763** (2013) 33, 20 January 2013 (arXiv:1210.3273).

26. IceCube Collaboration, "Search for Relativistic Magnetic Monopoles with IceCube", Phys Rev **D87** (2013) 022001, 18 January 2013 (arXiv:1208.4861).

27. IceCube Collaboration, "Lateral Distribution of Muons in IceCube Cosmic Ray Events", Phys Rev **D87** (2013) 012005, 7 January 2013 (arXiv:1208.2979).

28. IceCube Collaboration, "Observation of an Anisotropy in the Galactic Cosmic Ray Arrival Direction at 400 TeV with IceCube", ApJ (2012) **746**, 33 (arXiv:1109.1017).

29. P. Scott, C. Savage, J. Edsjö and the IceCube Collaboration, "Use of Event-Level Neutrino Telescope Data in Global Fits for Theories of New Physics", JCAP **11** (2012) 057, November 2012 (arXiv:1207.0810).

30. IceCube Collaboration, "A Search for Ultrahigh Energy Tau Neutrinos with IceCube", Phys Rev **D86** (2012) 022005 (arXiv:1202.4564).

31. IceCube Collaboration, "An absence of neutrinos associated with cosmic-ray acceleration in γ-ray bursts", Nature **484**, 351-354, 2012 (arXiv:1112.1840).

32. IceCube Collaboration, "Multi-year search for dark matter annihilations in the Sun with the AMANDA-II and IceCube detectors", Phys Rev **D85**, 042002 (2012) (arXiv:1112.1840).

33. IceCube Collaboration, "Searching for soft relativistic jets in Core-collapse Supernovae with the IceCube Optical Follow-up Program", A&A **539** (2012) A60, (arXiv:1111.7030).

34. IceCube Collaboration, "The Design and Performance of IceCube DeepCore", ApJ **35**, 615 (2012) (arXiv:1109.6096).

35. IceCube Collaboration, "Searches for periodic neutrino emission from binary systems with 22 and 40 strings of IceCube", ApJ **748** (2012) 118, (arXiv:1108.3023).

36. IceCube Collaboration, "IceCube Sensitivity for Low-Energy Neutrinos from Nearby Supernovae", A&A **535**, A109, 2011 (arXiv:1108.0171).

37. IceCube Collaboration, "Neutrino analysis of the September 2010 Crab Nebula flare and time-integrated constraints on neutrino emission from the Crab using IceCube", ApJ **745** (2012) 45, 2011 (arXiv:1106.3484).

38. IceCube Collaboration, "Search for Neutrinos from Annihilating Dark Matter in the Direction of the Galactic Center with the 40-String IceCube Neutrino Observatory", e-print 12 October 2012 (arXiv:1210.3557); revised 10 April 2013.

39. IceCube Collaboration, "A Search for a Diffuse Flux of Astrophysical Muon Neutrinos with the IceCube 40-String Detector", Phys Rev **D 84**, 082001, 2011 (arXiv:1104.5187).

40. IceCube Collaboration, "Time-Dependent Searches for Point Sources of Neutrinos with the 40-String and 22-String Configurations of IceCube", ApJ **744** (2012) 1 (arXiv:1104.0075).

41. IceCube Collaboration, "Constraints on the Extremely-high Energy Cosmic Neutrino Flux with the IceCube 2008-2009 Data", Phys Rev **D 83**, 092003, 2011 (arXiv:1103.4250).

42. IceCube Collaboration, "Background studies for acoustic neutrino detection at the South Pole", ApJ Vol.**35**, 6, 312-324 2011 (arXiv:1103.1216).

43. IceCube Collaboration, "Search for Dark Matter from the Galactic Halo with the IceCube Neutrino Observatory", Phys Rev **D 84**, 022004, 2011 (arXiv:1101.3349).

44. IceCube Collaboration, "First search for atmospheric and extraterrestrial neutrino-induced cascades with the IceCube detector", Phys Rev **D 84**, 072991, 2011 (arXiv:1101.1692).

45. IceCube Collaboration, "Limits on Neutrino Emission from Gamma-Ray Bursts with the 40 String IceCube Detector", Phys Rev Letters **106**, 141101, 2011 (arXiv:1101.1448).

46. IceCube Collaboration, "Time-Integrated Searches for Point-like Sources of Neutrinos with the 40-String IceCube Detector", ApJ **732**, 18, 2011 (arXiv:1012.2137).

47. IceCube Collaboration, "Constraints on high-energy neutrino emission from SN 2008", A&A **527**, A28, 2011 (arXiv:1101.3942).

48. IceCube Collaboration, "Measurement of the atmospheric neutrino energy spectrum from 100 GeV to 400 TeV with IceCube", Phys Rev **D 83**, 012001, 2011 (arXiv:1010.3980).

49. IceCube Collaboration, "Search for a Lorentz-violating sidereal signal with atmospheric neutrinos in IceCube", Phys Rev **D 82**, 112003, 2010 (arXiv:1010.4096).

50. IceCube Collaboration, "Search for relativistic magnetic monopoles with the AMANDA-II neutrino telescope", EPJ C Vol.**69**, No.3-4, 361-378, 2010.

51. IceCube Collaboration, "Measurement of the Anisotropy of Cosmic Ray Arrival Directions with IceCube", ApJ Letters Vol.**79**, No.10, p102001, 2009 (arXiv:1005.2960).

52. IceCube Collaboration, "Calibration and Characterization of the IceCube Photomultiplier Tube", NIM **A618** (2010) 139-152, 1-21 June 2010 (arXiv:1002.2442).

53. IceCube Collaboration, "Measurement of Sound Speed vs Depth in South Pole Ice for Neutrino Astronomy", ApJ **33** (2010) 277-286, June-July 2010 (arXiv:0909.2629).

54. IceCube Collaboration, "Limits on a Muon Flux from Kaluza-Klein Dark Matter Annihilations in the Sun from the IceCube 22-string Detector", Phys Rev **D81** (2010) 057101, 29 March 2010 (arXiv:0910.4480).

55. IceCube Collaboration, "Search for Muon Neutrinos from Gamma-Ray Bursts with the IceCube Neutrino Telescope", ApJ **710** (2010) 346-359, 10 February 2010 (arXiv:0907.2227).

56. IceCube Collaboration, "Extending the Search for Neutrino Point Sources with IceCube above the Horizon", Phys Rev Letters **103** (2009) 221102, 24 November 2009 (arXiv:0911.2338).

57. IceCube Collaboration, "Search for High-Energy Muon Neutrinos from the "Naked-Eye" GRB 080319B with the IceCube Neutrino Telescope", ApJ **701** (2009) 1721-1731, 20 August 2009; erratum ibid 708 (2010) 911-912, 1 January 2010 (arXiv:0902.0131).

58. IceCube Collaboration, "First Neutrino Point-Source Results From the 22 String IceCube Detector", ApJ Letters **701** (2009) L47-L51, 10 August 2009 (arXiv:0905.2253).

59. IceCube Collaboration, "The IceCube Data Acquisition System: Signal Capture, Digitization, and Timestamping", NIM **A601** (2009) 294-316, 1 April 2009 (arXiv:0810.4930).

60. IceCube Collaboration, "Search for Point Sources of High Energy Neutrinos with Final Data from AMANDA-II"," Phys Rev **D79** (2009) 062001, 18 March 2009 (arXiv:0809.1646)