James R. Braun

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Professional Appointments

Scientist, Wisconsin IceCube Particle Astrophysics Center.	2021 – Present
Instrumentation Engineer/Software Developer, Wisconsin IceCube Particle Astrophysics Center.	2013 – 2021
Research Associate, University of Maryland.	2009 – 2013
Graduate Research Assistant, University of Wisconsin–Madison.	2003 – 2009

Education

University of Wisconsin-Madison, Ph.D. – Physics (2009). 2003 – 2009

Ph.D. Thesis: *A Maximum-Likelihood Search for Neutrino Point Sources with the AMANDA-II Detector.*

Advisor: Albrecht Karle.

University of Wisconsin-Madison, BS – Physics and Mathematics (2003). 1998 – 2003

Professional Activities

Member of the **IceCube** neutrino telescope operations team. 2013 – Present

- **Development and maintenance of IceCube operations software**: Developed an application to send messages to/from the South Pole using Iridium modems to facilitate detector monitoring and real-time multi-messenger efforts. Developed a MongoDB database to store geometry and calibration data needed to reconstruct IceCube events. Maintained and added new features to the IceCube experiment control software.

- **Maintenance of IceCube waveform processing**: Maintained the software that calibrates photomultiplier tube (PMT) waveforms from raw data and unfolds them into discrete pulse charge and time. Made major performance and accuracy improvements. Identified undesirable artifacts in the unfolding and addressed them with novel changes to the algorithm.

- **Management**: Manager for IceCube-Gen2 instrumentation software and firmware. Manager for IceCube Upgrade online software. Coordinated with developers and other managers, designed portions of the Upgrade and Gen2 data-taking architecture, and set schedules and budgets.

- **IceCube Upgrade embedded development**: Provided infrastructure for development of microcontroller (MCU) software running on Upgrade devices. Managed and contributed to the effort to support hardware connected to the MCU. Provided MCU software routines to calibrate device hardware. Performed initial hardware testing and debugging.

- **Data analysis**: Developed a new time-domain neutrino point source search method looking for multiple flares from a single source and demonstrated that the new method is more sensitive than existing single-flare and time-independent searches for a wide-variety of signal hypotheses. Worked with a graduate student to apply this search to IceCube data. Developed an algorithm to distinguish unintended light pulses emitted by IceCube optical modules from physics events.

Collaborator on the **HAWC** high-energy gamma ray telescope. 2009 – 2013

- **Reconstruction software lead**: Developed a maximum-likelihood axis reconstruction for high energy air showers, a performance-optimized air shower core fitter, and an expectation-maximization algorithm to separate coincident air showers. Major developer of the HAWC online/offline software framework. Developed the software trigger and event builder framework used in HAWC online data processing.

- **Data manager**: Determined appropriate trigger thresholds and data volumes. Developed data quality monitoring software. Developed a new generic data format for HAWC data and released it as open source.

- **Maryland HAWC data archive manager**: Specified a modular system to handle the HAWC data requirement of 600 TB/yr. Built initial system using Lustre and Infiniband. Handled day-to-day maintenance.

- **Data analysis**: Set flux limits on the TeV emission from the 2007 Crab Nebula flare recorded by AGILE using data from Milagro.

Member of the **IceCube** and **AMANDA-II** neutrino telescope projects. 2003 – 2009

- **Calibration and software development**: Co-authored the IceCube optical module self-calibration software that acquires PMT waveforms and calibrates PMT gain, PMT transit time, and calibrates many of the on-board analog components. Co-authored a high-throughput Java data acquisition system for optical module acceptance testing.

- **Data analysis**: Developed a maximum-likelihood analysis method to identify neutrino point sources from the atmospheric neutrino background. Adapted the method to use time information in the detection of bursting or periodic sources. Used this method to search the 2000–2006 AMANDA-II data for neutrino point sources. Performed a search for dark matter annihilation in the Sun using the 2000–2006 AMANDA-II data and set a limit on dark matter cross sections. Worked with a team of scientists to filter and reconstruct the AMANDA-II data recorded during 2005 and 2006.

Technical Experience

- **C/C++**: Over ten years experience. Very proficient with object-oriented programming techniques and the C++ standard template library. Significant experience with templates and the Boost libraries.
- **Embedded C**: Four years experience. Proficient with STM32 microcontrollers, including use of core MCU hardware (DMA, MPU, memory regions, clock tree, etc.), use of peripherals (SPI, I2C, UART, etc.), debugging with an oscilloscope, developing drivers for external ICs and FPGAs, and STM32 register-level development. Familiar with optimizing the performance of higher-level embedded software to minimize CPU core usage.
- **Python**: Eight years experience. Proficient with data transfer (e.g. sockets, ZMQ), remote method invocation, functional programming, and interaction with MongoDB databases.
- **Java**: Five years experience, including distributed and multi-threaded applications.
- **Software Development Tools**: Collaborative software development experience including the use of issue trackers (e.g Trac), revision control systems (SVN/Git), and build systems (e.g. CMake).
- **Data analysis tools**: Very proficient in numerical methods and large-scale data analysis. Ten years experience with the ROOT data analysis framework. Experience developing software to solve maximum-likelihood problems using expectation-maximization or numerical maximization. Experience with machine learning algorithms.
- **Linux administration**: Six years experience administering Red Hat distributions (Enterprise Linux, CentOS, and Scientific Linux), associated system services (NFS, MySQL, DHCP, etc.), and configuring and maintaining high-performance compute clusters with Condor and PBS.

Teaching and Advising Experience

Advised several undergraduate students. Nathan Borak (2013) developed tools for monitoring the HAWC detector, Spencer Griswold (2019) developed a driver for cameras deployed in IceCube Upgrade modules, and Abhiram Nallamalli (2021) studied the resolution of double-pulses in simulated IceCube-Gen2 PMT waveforms.	2013 – 2021
Advised graduate student Will Luszczak. Applied the new multiple-flare point source search method to IceCube data.	2018 – 2020
Teaching Assistant, Physics 248: *A Modern Introduction to Physics*, University of Wisconsin-Madison.	2007

Awards

University of Wisconsin-Madison Department of Physics: Emanuel R. Piore Memorial Award.	2004
University of Wisconsin-Madison Department of Physics: Albert Augustus Radtke Memorial Award.	2003
University of Wisconsin-Madison Department of Physics: L. R. Ingersoll Memorial Award.	2000

Publications in Refereed Journals

Publications with Few Authors

1. Jim Braun, Mike Baker, Jon Dumm, Chad Finley, Albrecht Karle, Teresa Montaruli, *Time-dependent point source search methods in high energy neutrino astronomy.* Astropart. Physics **33**, 175 (2010).

2. Jim Braun, Jon Dumm, Francesco De Palma, Chad Finley, Albrecht Karle, Teresa Montaruli, *Methods for point source analysis in high energy neutrino telescopes.* Astropart. Physics **29**, 299 (2008).

With the IceCube Collaboration

3. R. Abbasi *et al.*, *Search for Multi-Flare Neutrino Emissions in 10 Years of IceCube Data from a Catalog of Sources.* Astrophys. J. Lett. **920** (2021) L45.
4. R. Abbasi *et al.*, *All-flavor Constraints on Nonstandard Neutrino Interactions and Generalized Matter Potential with Three Years of IceCube DeepCore data.* Phys. Rev. D **104** (2021) 072006.
5. R. Abbasi *et al.*, *LeptonInjector and LeptonWeighter: A Neutrino Event Generator and Weighter for Neutrino Observatories.* Comput. Phys. Commun. **266** (2021) 108018.
6. R. Abbasi *et al.*, *A Muon-Track Reconstruction Exploiting Stochastic Losses for Large-Scale Cherenkov Detectors.* J. Instrum. **16** (2021) P08034.
7. R. Abbasi *et al.*, *A Convolutional Neural Network based Cascade Reconstruction for the IceCube Neutrino Observatory.* J. Instrum. **16** (2021) P07041.
8. R. Abbasi *et al.*, *The IceCube High-Energy Starting Event Sample: Description and Flux Characterization with 7.5 Years of Data.* Phys. Rev. D **104** (2021) 022002.
9. R. Abbasi *et al.*, *Measurement of the High-Energy All-Flavor Neutrino-Nucleon Cross Section with IceCube.* Phys. Rev. D **104** (2021) 022001.
10. M. G. Aartsen *et al.*, *IceCube-Gen2: The Window to the Extreme Universe.* J. Phys. G **48** (2021) 060501.
11. R. Abbasi *et al.*, *Search for GeV Neutrino Emission During Intense Gamma-Ray Solar Flares with the IceCube Neutrino Observatory.* Phys. Rev. D **103** (2021) 102001.
12. R. Abbasi *et al.*, *A Search for Time-Dependent Astrophysical Neutrino Emission with IceCube Data from 2012 to 2017.* Astrophys. J. **911** (2021) 67.
13. R. Abbasi *et al.*, *Follow-up of Astrophysical Transients in Real Time with the IceCube Neutrino Observatory.* Astrophys. J. **910** (2021) 4.
14. M. G. Aartsen *et al.*, *Detection of a Particle Shower at the Glashow Resonance with IceCube.* Nature **591** (2021) 220-224.
15. M. G. Aartsen *et al.*, *Searches for Neutrinos from Cosmic-Ray Interactions in the Sun Using Seven Years of IceCube Data.* J. Cosmol. Astropart. Phys. **02** (2021) 025.

16. M. G. Aartsen *et al.*, *Measurements of the Time-Dependent Cosmic-Ray Sun Shadow with Seven Years of IceCube Data - Comparison with the Solar Cycle and Magnetic Field Models*. Phys. Rev. D **103** (2021) 042005.

17. H. A. Ayala *et al.*, *Multimessenger Gamma-Ray and Neutrino Coincidence Alerts Using HAWC and IceCube Sub-threshold Data*. Astrophys. J. **906** (2021) 63.

18. M. G. Aartsen *et al.*, *Cosmic Ray Spectrum from 250 TeV to 10 PeV Using IceTop*. Phys. Rev. D **102** (2020) 122001.

19. A. Albert *et al.*, *Combined Search for Neutrinos from Dark Matter Self-Annihilation in the Galactic Centre with ANTARES and IceCube*. Phys. Rev. D **102** (2020) 082002.

20. M. G. Aartsen *et al.*, *Computational Techniques for the Analysis of Small Signals in High-Statistics Neutrino Oscillation Experiments*. Nucl. Instrum. Meth. A **977** (2020) 164332.

21. M. G. Aartsen *et al.*, *eV-Scale Sterile Neutrino Search Using Eight Years of Atmospheric Muon Neutrino Data from the IceCube Neutrino Observatory*. Phys. Rev. Lett. **125** (2020) 141801.

22. M. G. Aartsen *et al.*, *Searching for eV-Scale Sterile Neutrinos with Eight Years of Atmospheric Neutrinos at the IceCube Neutrino Telescope*. Phys. Rev. D **102** (2020) 052009.

23. M. G. Aartsen *et al.*, *Characteristics of the Diffuse Astrophysical Electron and Tau Neutrino Flux with Six Years of IceCube High Energy Cascade Data*. Phys. Rev. Lett. **125** (2020) 121104.

24. M. G. Aartsen *et al.*, *Velocity Independent Constraints on Spin-Dependent DM-Nucleon Interactions from IceCube and PICO*. EPJ C **80** (2020) 819.

25. M. G. Aartsen *et al.*, *IceCube Search for High-Energy Neutrino Emission from TeV Pulsar Wind Nebulae*. Astrophys. J. **898** (2020) 117.

26. M. G. Aartsen *et al.*, *IceCube Search for Neutrinos Coincident with Compact Binary Mergers from LIGO-Virgo's First Gravitational-Wave Transient Catalog*. Astrophys. J. Lett. **898** (2020) L10.

27. M. G. Aartsen *et al.*, *Constraints on Neutrino Emission from Nearby Galaxies Using the 2MASS Redshift Survey and IceCube*. J. Cosmol. Astropart. Phys. **07** (2020) 042.

28. M. G. Aartsen *et al.*, *In-situ Calibration of the Single-Photoelectron Charge Response of the IceCube Photomultiplier Tubes*. J. Instrum. **15** (2020) P06032.

29. M. G. Aartsen *et al.*, *A Search for Neutrino Point-Source Populations in 7 Years of IceCube Data with Neutrino-Count Statistics*. Astrophys. J. **893** (2020) 102.

30. A. Albert *et al.*, *ANTARES and IceCube Combined Search for Neutrino Point-like and Extended Sources in the Southern Sky*. Astrophys. J. **892** (2020) 92.

31. M. G. Aartsen *et al.*, *A Search for IceCube Events in the Direction of ANITA Neutrino Candidates*. Astrophys. J. **892** (2020) 53.

32. M. G. Aartsen *et al.*, *Neutrinos Below 100 TeV from the Southern Sky Employing Refined Veto Techniques to IceCube Data*. Astropart. Physics **116** (2020) 102392.

33. M. G. Aartsen *et al.*, *Search for PeV Gamma-Ray Emission from the Southern Hemisphere with 5 Yr of Data from the IceCube Observatory*. Astrophys. J. **891** (2020) 9.

34. M. G. Aartsen *et al.*, *Combined Sensitivity to the Neutrino Mass Ordering with JUNO, the IceCube Upgrade, and PINGU*. Phys. Rev. D **101** (2020) 032006.

35. M. G. Aartsen *et al.*, *A Search for MeV to TeV Neutrinos from Fast Radio Bursts with IceCube*. Astrophys. J. **890** (2020) 111.

36. M. G. Aartsen *et al.*, *Time-integrated Neutrino Source Searches with 10 years of IceCube Data*. Phys. Rev. Lett. **124** (2020) 051103.

37. M. G. Aartsen *et al.*, *Design and Performance of the first IceAct Demonstrator at the South Pole*. J. Instrum. **15** (2020) T02002.

38. M. G. Aartsen *et al.*, *Development of an Analysis to Probe the Neutrino Mass Ordering with Atmospheric Neutrinos Using Three Years of IceCube DeepCore Data*. EPJ C **80** (2020) 009.

39. M. G. Aartsen *et al.*, *Search for Sources of Astrophysical Neutrinos Using Seven Years of IceCube Cascade Events*. Astrophys. J. **886** (2019) 12.

40. M. G. Aartsen *et al.*, *Cosmic Ray Spectrum and Composition from PeV to EeV Using 3 Years of Data From IceTop and IceCube*. Phys. Rev. D **100** (2019) 082002.

41. M. G. Aartsen *et al.*, *Efficient Propagation of Systematic Uncertainties from Calibration to Analysis with the SnowStorm Method in IceCube*. J. Cosmol. Astropart. Phys. **10** (2019) 048.

42. S. Garrappa *et al.*, *Investigation of Two Fermi-LAT Gamma-Ray Blazars Coincident with High-Energy Neutrinos Detected by IceCube*. Astrophys. J. **880** (2019) 103.

43. E. Kankare *et al.*, *A Search for Transient Optical Counterparts to High-Energy IceCube Neutrinos with Pan-STARRS1*. Astron. Astrophys. **626** (2019) A117.

44. M. G. Aartsen *et al.*, *Search for Steady Point-Like Sources in the Astrophysical Muon Neutrino Flux with 8 Years of IceCube Data*. EPJ C **79** (2019) 234.

45. M. G. Aartsen *et al.*, *Detection of the Temporal Variation of the Sun's Cosmic Ray Shadow with the IceCube Detector*. Astrophys. J. **872** (2019) 133.

46. M. G. Aartsen *et al.*, *Measurement of Atmospheric Tau Neutrino Appearance with IceCube DeepCore*. Phys. Rev. D **99** (2019) 032007.

47. M. G. Aartsen *et al.*, *Measurements Using the Inelasticity Distribution of Multi-TeV Neutrino Interactions in IceCube*. Phys. Rev. D **99** (2019) 032004.

48. M. G. Aartsen *et al.*, *Constraints on Minute-Scale Transient Astrophysical Neutrino Sources*. Phys. Rev. Lett. **122** (2019) 051102.

49. A. U. Abeysekara *et al.*, *All-Sky Measurement of the Anisotropy of Cosmic Rays at 10 TeV and Mapping of the Local Interstellar Magnetic Field*. Astrophys. J. **871** (2019) 96.

50. A. Albert *et al.*, *Search for Multimessenger Sources of Gravitational Waves and High-energy Neutrinos with Advanced LIGO during its first Observing Run, ANTARES and IceCube*. Astrophys. J. **870** (2019) 134.

51. A. Albert *et al.*, *Joint Constraints on Galactic Diffuse Neutrino Emission from the ANTARES and IceCube Neutrino Telescopes*. Astrophys. J. Lett. **868** (2018) L20.

52. M. G. Aartsen *et al.*, *Astrophysical Neutrinos and Cosmic Rays Observed by IceCube*. Adv. Space Res. **62** (2018) 2902-2930.

53. M. G. Aartsen *et al.*, *Search for Neutrinos from Decaying Dark Matter with IceCube*. EPJ C **78** (2018) 831.

54. M. G. Aartsen *et al.*, *Differential Limit on the Extremely-High-Energy Cosmic Neutrino Flux in the Presence of Astrophysical Background from Nine Years of IceCube Data*. Phys. Rev. D **98** (2018) 062003.

55. M. G. Aartsen *et al.*, *Neutrino Interferometry for High-Precision Tests of Lorentz Symmetry with IceCube*. Nature Physics **14** (2018) 961-966.

56. M. G. Aartsen *et al.*, *Neutrino Emission from the Direction of the Blazar TXS 0506+056 Prior to the IceCube-170922A Alert*. Science **361** (2018) 147-151.

57. M. G. Aartsen *et al.*, *Multimessenger Observations of a Flaring Blazar Coincident with High-Energy Neutrino IceCube-170922A*. Science **361** (2018) eaat1378.

58. M. G. Aartsen *et al.*, *A Search for Neutrino Emission from Fast Radio Bursts with Six Years of IceCube Data*. Astrophys. J. **857** (2018) 117.

59. M. G. Aartsen *et al.*, *Search for Nonstandard Neutrino Interactions with IceCube DeepCore*. Phys. Rev. D **97** (2018) 072009.

60. M. G. Aartsen *et al.*, *Measurement of Atmospheric Neutrino Oscillations at 6-56 GeV with IceCube DeepCore*. Phys. Rev. Lett. **120** (2018) 071801.

61. M. G. Aartsen *et al.*, *Measurement of the Multi-TeV Neutrino Cross Section with IceCube Using Earth Absorption*. Nature **551** (2017) 596-600.

62. A. Albert *et al.*, *Search for High-energy Neutrinos from Binary Neutron Star Merger GW170817 with ANTARES, IceCube, and the Pierre Auger Observatory*. Astrophys. J. Lett. **850** (2017) L35.

63. M. G. Aartsen *et al.*, *Multiwavelength Follow-up of a Rare IceCube Neutrino Multiplet*. Astron. Astrophys. **607** (2017) A115.

64. M. G. Aartsen *et al.*, *Constraints on Galactic Neutrino Emission with Seven Years of IceCube Data*. Astrophys. J. **849** (2017) 67.

65. M. G. Aartsen *et al.*, *Measurement of the ν_μ Energy Spectrum with IceCube-79*. EPJ C **77** (2017) 692.

66. M. G. Aartsen *et al.*, *Search for Neutrinos from Dark Matter Self-Annihilations in the Center of the Milky Way with 3 years of IceCube/DeepCore*. EPJ C **77** (2017) 627.

67. M. G. Aartsen *et al.*, *Search for Astrophysical Sources of Neutrinos Using Cascade Events in IceCube*. Astrophys. J. **846** (2017) 136.

68. A. Albert *et al.*, *Search for High-energy Neutrinos from Gravitational Wave Event GW151226 and Candidate LVT151012 with ANTARES and IceCube*. Phys. Rev. D **96** (2017) 022005.

69. M. G. Aartsen *et al.*, *Extending the Search for Muon Neutrinos Coincident with Gamma-Ray Bursts in IceCube Data*. Astrophys. J. **843** (2017) 112.

70. M. G. Aartsen *et al.*, *Search for Sterile Neutrino Mixing Using Three Years of IceCube DeepCore Data*. Phys. Rev. D **95** (2017) 112002.

71. M. G. Aartsen *et al.*, *The IceCube Realtime Alert System*. Astropart. Physics **92** (2017) 30-41.

72. M. G. Aartsen *et al.*, *PINGU: A Vision for Neutrino and Particle Physics at the South Pole*. J. Phys. G **44** (2017) 054006.

73. M. G. Aartsen *et al.*, *The IceCube Neutrino Observatory: Instrumentation and Online Systems*. J. Instrum. **12** (2017) P03012.

74. M. G. Aartsen *et al.*, *Search for Annihilating Dark Matter in the Sun with 3 Years of IceCube Data*. EPJ C **77** (2017) 146.

75. M. G. Aartsen *et al.*, *First Search for Dark Matter Annihilations in the Earth with the IceCube Detector*. EPJ C **77** (2017) 82.

76. M. G. Aartsen *et al.*, *All-sky Search for Time-integrated Neutrino Emission from Astrophysical Sources with 7 yr of IceCube Data*. Astrophys. J. **835** (2017) 151.

77. M. G. Aartsen *et al.*, *The Contribution of Fermi-2LAC Blazars to Diffuse TeV-PeV Neutrino Flux*. Astrophys. J. **835** (2017) 45.

78. M. G. Aartsen *et al.*, *Observation and Characterization of a Cosmic Muon Neutrino Flux from the Northern Hemisphere Using Six Years of IceCube Data*. Astrophys. J. **833** (2016) 3.

79. M. G. Aartsen *et al.*, *Constraints on Ultrahigh-Energy Cosmic-Ray Sources from a Search for Neutrinos Above 10 PeV with IceCube*. Phys. Rev. Lett. **117** (2016) 241101.

80. M. G. Aartsen *et al.*, *Very High-Energy Gamma-Ray Follow-Up Program Using Neutrino Triggers from IceCube*. J. Instrum. **11** (2016) P11009.

81. M. G. Aartsen *et al.*, *Search for Sources of High-Energy Neutrons with Four Years of Data from the IceTop Detector*. Astrophys. J. **830** (2016) 129.

82. M. G. Aartsen *et al.*, *All-flavour Search for Neutrinos from Dark Matter Annihilations in the Milky Way with IceCube/DeepCore*. EPJ C **76** (2016) 531.

83. M. G. Aartsen *et al.*, *Searches for Sterile Neutrinos with the IceCube Detector*. Phys. Rev. Lett. **117** (2016) 071801.

84. M. G. Aartsen *et al.*, *Anisotropy in Cosmic-Ray Arrival Directions in the Southern Hemisphere with Six Years of Data from the IceCube Detector*. Astrophys. J. **826** (2016) 220.

85. M. G. Aartsen *et al.*, *Neutrino Oscillation Studies with IceCube-DeepCore*. Nucl. Phys. **B908** (2016) 161-177.

86. S. Adri *et al.*, *High-Energy Neutrino Follow-Up Search of Gravitational Wave Event GW150914 with ANTARES and IceCube*. Phys. Rev. D **93** (2016) 122010.

87. M. G. Aartsen *et al.*, *Lowering IceCube's Energy Threshold for Point Source Searches in the Southern Sky*. Astrophys. J. Lett. **824** (2016) L28.

88. M. G. Aartsen *et al.*, *An All-Sky Search for Three Flavors of Neutrinos from Gamma-Ray Bursts with the IceCube Neutrino Observatory*. Astrophys. J. **824** (2016) 115.

89. S. Adri *et al.*, *First Combined Search for Neutrino Point-Sources in the Southern Hemisphere with the ANTARES and IceCube Neutrino Telescopes*. Astrophys. J. **823** (2016) 65.

90. M. G. Aartsen *et al.*, *Characterization of the Atmospheric Muon Flux in IceCube*. Astropart. Physics **78** (2016) 1-17.

91. M. G. Aartsen *et al.*, *Improved Limits on Dark Matter Annihilation in the Sun with the 79-string IceCube Detector and Implications for Supersymmetry*. J. Cosmol. Astropart. Phys. **04** (2016) 022.

92. M. G. Aartsen *et al.*, *Searches for Relativistic Magnetic Monopoles in IceCube*. EPJ C **76** (2016) 133.

93. M. G. Aartsen *et al.*, *Search for Correlations Between the Arrival Directions of IceCube Neutrino Events and Ultrahigh-Energy Cosmic Rays Detected by the Pierre Auger Observatory and the Telescope Array*. J. Cosmol. Astropart. Phys. **01** (2016) 037.

94. M. G. Aartsen *et al.*, *Search for Transient Astrophysical Neutrino Emission with IceCube-DeepCore*. Astrophys. J. **816** (2016) 75.

95. M. G. Aartsen *et al.*, *Search for Astrophysical Tau Neutrinos in Three Years of IceCube Data*. Phys. Rev. D **93** (2016) 022001.

96. M. G. Aartsen *et al.*, *Search for Dark Matter Annihilation in the Galactic Center with IceCube-79*. EPJ C **75** (2015) 492.

97. M. G. Aartsen *et al.*, *Detection of a Type IIn Supernova in Optical Follow-up Observations of IceCube Neutrino Events*. Astrophys. J. **811** (2015) 52.

98. M. G. Aartsen *et al.*, *Evidence for Astrophysical Muon Neutrinos from the Northern Sky with IceCube*. Phys. Rev. Lett. **115** (2015) 081102.

99. M. G. Aartsen *et al.*, *A Combined Maximum-Likelihood Analysis of the High-Energy Astrophysical Neutrino Flux Measured with IceCube*. Astrophys. J. **809** (2015) 98.

100. M. G. Aartsen *et al.*, *Measurement of the Atmospheric ν_e Spectrum with IceCube*. Phys. Rev. D **91** (2015) 122004.

101. R. Abbasi *et al.*, *Background Studies for Acoustic Neutrino Detection at the South Pole*. Astropart. Physics **35** (2012) 312-324.

102. R. Abbasi *et al.*, *Time-Dependent Searches for Point Sources of Neutrinos with the 40-String and 22-String Configurations of IceCube*. Astrophys. J. **744** (2012) 1.

103. R. Abbasi *et al.*, *First Search for Atmospheric and Extraterrestrial Neutrino-Induced Cascades with the IceCube Detector*. Phys. Rev. D **84** (2011) 072001.

104. R. Abbasi *et al.*, *Search for Dark Matter from the Galactic Halo with the IceCube Neutrino Telescope*. Phys. Rev. D **84** (2011) 022004.

105. R. Abbasi *et al.*, *Constraints on the Extremely-high Energy Cosmic Neutrino Flux with the IceCube 2008-2009 Data*. Phys. Rev. D **83** (2011) 092003.

106. R. Abbasi *et al.*, *Time-Integrated Searches for Point-like Sources of Neutrinos with the 40-String IceCube Detector*. Astrophys. J. **732** (2011) 18.

107. R. Abbasi *et al.*, *Limits on Neutrino Emission from Gamma-Ray Bursts with the 40 String IceCube Detector*. Phys. Rev. Lett. **106** (2011) 141101.

108. R. Abbasi *et al.*, *Constraints on High-Energy Neutrino Emission from SN 2008D*. Astron. Astrophys. **527** (2011) A28.

109. R. Abbasi *et al.*, *Measurement of the Atmospheric Neutrino Energy Spectrum from 100 GeV to 400 TeV with IceCube*. Phys. Rev. D **83** (2011) 012001.

110. R. Abbasi *et al.*, *Search for Neutrino-Induced Cascades with Five Years of AMANDA Data*. Astropart. Physics **34** (2011) 420-430.

111. R. Abbasi *et al.*, *Measurement of Acoustic Attenuation in South Pole Ice*. Astropart. Physics **34** (2011) 382-393.

112. R. Abbasi *et al.*, *Search for a Lorentz-Violating Sidereal Signal with Atmospheric Neutrinos in IceCube*. Phys. Rev. D **82** (2010) 112003.

113. R. Abbasi *et al.*, *Search for Relativistic Magnetic Monopoles with the AMANDA-II Neutrino Telescope*. EPJ C **69** (2010) 361-378.

114. R. Abbasi *et al.*, *First Search for Extremely High Energy Cosmogenic Neutrinos with the IceCube Neutrino Observatory*. Phys. Rev. D **82** (2010) 072003.

115. R. Abbasi *et al.*, *The Energy Spectrum of Atmospheric Neutrinos between 2 and 200 TeV with the AMANDA-II Detector*. Astropart. Physics **34** (2010) 48-58.

116. R. Abbasi *et al.*, *Measurement of the Anisotropy of Cosmic Ray Arrival Directions with IceCube*. Astrophys. J. Lett. **718** (2010) L194-L198.

117. R. Abbasi *et al.*, *Calibration and Characterization of the IceCube Photomultiplier Tube*. Nucl. Instrum. Meth. A **618** (2010) 139-152.

118. R. Abbasi *et al.*, *Measurement of Sound Speed vs Depth in South Pole Ice for Neutrino Astronomy*. Astropart. Physics **33** (2010) 277-286.

119. R. Abbasi *et al.*, *Limits on a Muon Flux from Kaluza-Klein Dark Matter Annihilations in the Sun from the IceCube 22-string Detector*. Phys. Rev. D **81** (2010) 057101.

120. R. Abbasi *et al.*, *Search for Muon Neutrinos from Gamma-Ray Bursts with the IceCube Neutrino Telescope*. Astrophys. J. **710** (2010) 346-359.

121. R. Abbasi *et al.*, *Extending the Search for Neutrino Point Sources with IceCube above the Horizon*. Phys. Rev. Lett. **103** (2009) 221102.

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