Curriculum Vitae

Dr. Donglian Xu

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EDUCATION

Ph.D. in Physics 05/2015

University of Alabama, Tuscaloosa, Alabama

Dissertation: Search for Astrophysical Tau Neutrinos in Three Years of IceCube Data

Advisor: Prof. Dawn Williams

M.S. in Physics 08/2008 – 05/2012

University of Alabama, Tuscaloosa, Alabama

Thesis: Atmospheric Tau Neutrino Appearance with IceCube-DeepCore

Advisor: Prof. Dawn Williams

B.S. in Astrophysics 09/2005 – 07/2008

University of Science & Technology of China, College of Science, Hefei, Anhui, China

Thesis: Unsaturated Low-ionization Broad Absorption Line Quasars

Advisor: Prof. Tinggui Wang

Freshmen in Material Science & Engineering 09/2004 – 07/2005

University of Science & Technology of China, College of Chemistry, Hefei, Anhui, China

RESEARCH EXPERIENCE

Postdoctoral Researcher 08/2015 – present

Wisconsin IceCube Particle Astrophysics Center (WIPAC), UW-Madison, Wisconsin

Scope of Work: My work at WIPAC has been centered around finding astrophysical neutrino point sources and refining techniques to detect astrophysical tau neutrinos with IceCube.

- Developed unbinned maximum likelihood methods to search for coincident neutrino emission from fast radio bursts in any time durations. This tool is now used in IceCube to perform fast response follow-ups on any transient sources.
- Analyzed 6 years of IceCube data in search of neutrino emission from fast radio bursts using the unbinned maximum likelihood method. Searches were conducted in 25 expanding time windows to reduce model dependence and maximize discovery power (paper is in final collaboration review).
- Proposed a stacked multi neutrino flare search with blazars similar to TXS0506+056, which was found to correlate with an IceCube EHE event during its broadband flaring in September 2017. The stacked search will remove external trial penalty and reduce background integration, which will in turn boost discovery potential.
- Initiated follow-up observation plans with the Hard X-ray Modulation Telescope (HXMT) on IceCube neutrino alerts.
- Improved astrophysical tau neutrino identification techniques using IceCube waveforms -- detection efficiency increase by ~50%.
- Re-optimized the event selection chain for selecting high-energy tau neutrino event candidates.
- Analyzing 7 years of IceCube data, with two astrophysical tau neutrinos expected (analysis is currently under collaboration review).

Graduate Research Assistant with IceCube 08/2009 – 05/2015

University of Alabama, Tuscaloosa, Alabama

Scope of Work: My work here was multifaceted in regards to IceCube including, but not limited to, helping to ensure that the newly completed detector ran smoothly while maintaining its integrity, constructing tools for the atmospheric tau neutrino appearance analysis using IceCube-DeepCore, and developing new techniques to detect astrophysical tau neutrinos in IceCube.

- Invented a novel method to detect astrophysical tau neutrinos via IceCube sensor waveforms with double pulse features.
- Independently implemented the double pulse method using Python.
- Analyzed three years of IceCube data (~ TB) with the double pulse method. First analysis in IceCube to be sensitive to astrophysical tau neutrinos. Results were published in Physics Review D in 2016.
- Wrote likelihood fitting method to fit for atmospheric neutrino oscillation parameters $\sin^2(2\theta_{23})$ and Δm^2_{23} in the tau neutrino appearance channel, using IceCube-DeepCore data.
- Worked on low energy (5-60 GeV) cascade reconstruction algorithms, aiming to improve energy resolution for the atmospheric tau neutrino appearance analysis. Re-calibrated an existing seeding algorithm for low energy cascade event reconstructions. Results were widely used by collaborators.
- Studied neutrino cross sections used in the GENIE neutrino simulation software at the low-energy region (10GeV-190GeV) where neutrino oscillation physics and low-energy dark matter physics are important. Cross-checked those cross sections (tau neutrino cross sections in particular) with the literature.
- Took responsibility in online filtering and low-level reconstructions for the IceCube-DeepCore data stream quality control for 2012.
- Took charge of the monitoring shift for two weeks to watch over the IceCube detector for smooth operation and data quality control.
- Deployed in Jan. 2011 to the IceCube site at the South Pole to collect flasher data samples to calibrate the newly completed detector. These data samples were used to build detailed ice models, which led to the discovery of astrophysical neutrinos in 2012.
- Studied potential South Pole glacial ice shear due to temperature variation in different ice layers, using flasher data samples from both IceCube and AMANDA. No evidence of ice shear was found, which reassured the geometrical integrity of the IceCube detector.

Research Assistant on Quasar Absorption Lines 09/2007 – 07/2008

University of Science & Technology of China, Center for Astrophysics, Hefei, Anhui, China

Scope of Work: My work here focused on finding evidence for common connections between unsaturated broad absorption lines in quasars and AGN feedback mechanisms.

- Wrote code in Interactive Data Language (IDL) to identify quasars with unsaturated low-ionization broad absorption lines (BALs) from SDSS data.
- Developed programs to fit for characteristic absorption lines according to emission/absorption line templates.
- Modeled connections between BALs and AGN feedbacks. Results were documented in my undergrad thesis.

Research Intern on Mock Redshift Galaxy Surveys 07/2007 – 08/2007

Shanghai Astronomical Observatory, Chinese Academy of Science, Shanghai, China

- Studied galaxy redshift distortions due to their local peculiar velocities.
- Learned about neural networks employed in mock galaxy simulations.

Robot Development for Anhui Robot Game 2006 – Battle Field 05/2006 – 10/2006

University of Science & Technology of China, College of Science, Hefei, Anhui, China

- Constructed architectures for two robots based on preliminary strategies designed for the battles.
- Designed and welded electronic circuits for the two robots.
- Independently designed a high-performance servos system which collected and released targets efficiently when triggered.
- Wrote code in assembly language for single chips (Atmel AT89S51) to control the servos system and to control the two robots.

- Successfully calibrated the servos system to have precise tempos (100% success rates at test).
- Led battling strategy planning with teammates.

HONORS

Graduate Council Research/Creative Activity Fellowship - $37,000 08/2013 – 04/2014
University of Alabama

Antarctica Service Medal of the United States of America (established by US Congress) 03/2012
National Science Foundation

China State-Sponsored Study Abroad Scholarship (declined) - $80,000 08/2008 – 08/2012
University of Science & Technology of China

Silver medal for the 2006 Anhui Province Robot Game - Battle Field 10/2006
University of Science & Technology of China

ACADEMIC SUPERVISING EXPERIENCE

Wisconsin IceCube Particle Astrophysics Center (WIPAC), UW-Madison

Sam Fahey, physics graduate student at UW-Madison 09/2015 – present
Logan Wille, physics graduate student at UW-Madison 12/2016 – present
Jose Caprio, WIPAC visiting student from PCUP, Lima, Peru 09/2015 – 12/2016
Steven Eulig, WIAPC visiting student from Bochum, Germany 04/2016 – 07/2016
Shikhar Mittal, Undergraduate Research Scholar at UW-Madison 09/2016 – 05/2017
Piper Lincoln, Undergraduate Research Scholar at UW-Madison 09/2016 – 05/2017

TEACHING EXPERIENCE

Wisconsin IceCube Particle Astrophysics Center (WIPAC), UW-Madison
WIPAC High School Internship, *Dark Matter Simulation*, co-instructor 09/2015 – 12/2015

University of Alabama, Tuscaloosa, Alabama
AY102, *Intro Astronomy Lab,* instructor 06/2009 – 07/2009
Physics summer interim, teaching assistant 05/2009 – 06/2009
PH105, *General Physics with Calculus I,* teaching assistant 08/2008 – 05/2009

University of Science & Technology of China, Hefei, China
Math/science tutor and mentor at local houses 10/2006 – 10/2007

INVITED SEMINARS/COLLOQUIUM

Purple Mountain Observatory, Chinese Academy of Science, Astro Seminar 08/23/2017
Talk: *Multi-messenger Astronomy with IceCube and Prospects of IceCube-Gen2*

Nanjing University, Astro Seminar 08/23/2017
Talk: *Multi-messenger Astronomy with IceCube and Prospects of IceCube-Gen2*

Shanghai Jiao Tong University, HEP Seminar 08/21/2017
Talk: *Multi-messenger Astronomy with IceCube and Prospects of IceCube-Gen2*

National Astronomical Observatories, Chinese Academy of Science, NAOC Seminar 10/14/2016
Talk: *Exploring the Universe with Neutrinos*

Institute of High Energy Physics (IHEP), Chinese Academy of Science, HEP Seminar 10/13/2016
Talk: *Exploring the Universe with Neutrinos*

Peking University, HEP Seminar 10/12/2016
Talk: *Exploring the Universe with Neutrinos*

University of Science and Technology of China, Astro Colloquium 10/11/2016
Talk: *Exploring the Universe with Neutrinos*

University of Wisconsin-La Crosse, Physics Seminar 04/13/2016
Talk: *Hunting Astrophysical Neutrinos with IceCube*

Sun Yat-Sen University, 1st Youth Scholar Forum 12/19/2015
Talk: *Hunting Astrophysical Neutrinos with the IceCube Neutrino Observtory*

Stony Brook University, HEP Seminar 02/23/2015
Talk: *Search for Astrophysical Tau Neutrinos in Three Years of IceCube Data*

University of Chicago, KICP Seminar 02/26/2015
Talk: *Search for Astrophysical Tau Neutrinos in Three Years of IceCube Data*

CONFERENCES & WORKSHOPS

IceCube 2017 Fall Collaboration Meeting 10/2017
Talk: *Systematics for the Straight Cut Tau Double Pulse Analysis & Bright Waveforms*
Berlin, Germany

[**Invited**] Workshop on Astroparticle Physics II 08/2017
Talk: *Multi-messenger Astronomy with IceCube and Prospects of IceCube-Gen2*
Beijing, China

TeV Particle Astrophysics 2017 (TeVPA2017) 08/2017
Talk: *Search for High-Energy Neutrino Emission from Fast Radio Bursts with IceCube*
Columbus, Ohio

The 35th International Cosmic Ray Conference 07/2017
Talk: *Search for High-Energy Neutrino Emission from Fast Radio Bursts with IceCube*
Busan, South Korea

IceCube 2017 Spring Collaboration Meeting 05/2017
Plenary talk: *Search for Neutrino Emission from Fast Radio Bursts – Unblinding Results*
Talk: *Search for Astrophysical Tau Neutrinos in the IceCube Waveforms*
Madison, Wisconsin

APS Physics April Meeting 01/2017
Talk: *Search for High-Energy Neutrino Emission from Fast Radio Bursts*
Washington, D.C.

IceCube 2016 Fall Collaboration Meeting 09/2016
Talk: *Search for Neutrino Emission from Fast Radio Bursts*
Mainz, Germany

[Invited] The 14th International Workshop on Tau Lepton Physics 09/2016
Plenary talk: *Recent Results from IceCube*
Beijing, China

The 38th International Conference on High Energy Physics 08/2016
Talk: *Astrophysical Tau Neutrinos in IceCube*
Chicago, Illinois

IceCube 2016 Spring Collaboration Meeting 04/2016
Talk: *Search for Neutrino Emission from Fast Radio Bursts*
Stony Brook, New York

IceCube 2015 Fall Collaboration Meeting 10/2015
Talk: *Possible Neutrino Emission from Fast Radio Bursts*
Copenhagen, Denmark

APS Physics April Meeting 04/2015
Talk: *Search for Astrophysical Tau Neutrinos in Three Years of IceCube Data*
Baltimore, Maryland

IceCube 2014 Fall Collaboration Meeting 09/2014
Plenary talk: *Three-year IC86 High Energy ν_τ Double Pulse Event Search -- Unblinding Results*
CERN, Geneva, Switzerland

IceCube 2013 Fall Collaboration Meeting 10/2013
Talk: *IC79+IC86-I+IC86-II High Energy ν_τ Double Pulse Event Search*
Munich, Germany

The 33rd International Cosmic Ray Conference 07/2013
Poster: *Detecting Tau Neutrino in IceCube with Double Pulses*
Rio de Janeiro, Brazil

IceCube 2013 Spring Collaboration Meeting 05/2013
Talk: *IC86 NuTau Double Pulse Event Search*
Madison, Wisconsin

IceCube 2012 Fall Collaboration Meeting 09/2012 – 10/2012
Talk: *Photon Density Studies in DeepCore*
RWTH, Aachen, Germany

IceCube 2012 Spring Collaboration Meeting 03/2012
Talk: *Low Energy Cascade Reconstruction*
UC-Berkeley, Berkeley, CA

IceCube 2011 Fall Collaboration Meeting 09/2011
Talk: *Update on NuTau Appearance in DeepCore*
Uppsala, Sweden

The 32nd International Cosmic Ray Conference 08/2011
Poster: *Atmospheric Neutrino Oscillations with DeepCore*
Beijing, China

IceCube 2011 Spring Collaboration Meeting 05/2011
Talk: *NuTau Appearance in DeepCore*
Madison, Wisconsin

IceCube DeepCore Workshop 06/2010 – 07/2010
Talk: *GENIE cross sections*
Penn State University, University Park, PA

IceCube 2010 Spring Collaboration Meeting 05/2010
Annapolis, Maryland

Miami 2009 Topical Conference on Elementary Particle,
Astrophysics and Cosmology 12/2009
Fort Lauderdale, Florida

OTHER RESEARCH ACTIVITIES

Workshop: Finding a Roadmap to the First Neutrino Point Source 06/2016
Drexel University, Philadelphia

Fermilab Neutrino Detector R&D Facilities Workshop 01/2016
Fermi National Accelerator Laboratory
Batavia, Illinois

Summer Deployment to IceCube Site 01/2011 – 02/2011
Activity: IceCube calibration data collection

Amundsen-Scott South Pole Station, Antarctica

IceCube Software BootCamp & IceCube DeepCore Workshop 06/2011
University of Wisconsin, Madison

IceCube Software BootCamp 07/2009
University of Wisconsin, Madison

MEDIA

"Do fast radio bursts emit high-energy neutrinos?""
IceCube Press Release: https://wipac.wisc.edu/news/article/do-fast-radio-bursts-emit-high-energy-neutrinos

"The tau neutrino hunt is now in full swing"
IceCube Press Release: http://icecube.wisc.edu/news/view/363

"Looking for a particle in an ice stack"
UA Research Magazine, Spring 2012, Volume XV

"UA grad students work on project in Antarctica"
Tuscaloosa News, February 22, 2011

JOURNAL CLUBS & SEMINARS

University of Alabama, Astronomy Journal Club 02/14/2014
Talk: *Observation of the Unidentified Gamma-Ray Source TeV J2032+4130 by VERITAS*

University of Alabama, Astronomy Journal Club 09/13/2013
Talk: *Search for High-Energy ν_τ Double Pulse Events in IceCube*

University of Alabama, Astronomy Journal Club 02/01/2013
Talk: *Measurement of the Atmospheric ν_e Flux in IceCube*

University of Alabama, Astronomy Journal Club 10/12/2012
Talk: *A Search for Ultrahigh Energy Tau Neutrinos with IceCube.*

University of Alabama, Astronomy Journal Club 02/17/2012
Talk: *Searching for soft relativistic jets in Core-Collapse Supernovae (CCSN) with the IceCube Optical Follow-up Program*

University of Alabama, Preliminary Exam 11/14/2011
Talk: *NuTau Appearance with IceCube DeepCore Detector*

University of Alabama, Astronomy Journal Club 09/30/2011
Talk: *Neutrino analysis of the September 2010 Crab Nebula flare and time-integrated constraints on neutrino Emission from the Crab using IceCube*

University of Alabama, Astronomy Journal Club 04/01/2011
Talk: *First search for atmospheric and extraterrestrial Neutrino-induced cascades with the IceCube detector*

University of Alabama, Astronomy Journal Club 10/22/2010
Talk: *The first search for extremely high energy (EHE) Cosmogenic neutrinos with the IceCube Neutrino Observatory*

University of Alabama, AY640 04/15/2010
Radiative Processes in Astrophysics Class
Talk: *The SZ effect as a cosmological discriminator*

University of Alabama, Astronomy Journal Club 03/11/2010
Talk: *Nature Letters: Linking dwarf galaxies to halo building blocks with the most metal-poor star in Scultor*

University of Alabama, HEP Seminar 01/14/2010
Talk: *Ultra High Energy (UHE) Neutrino-Nucleon Cross Section*

University of Alabama, Astronomy Journal Club 10/16/2009
Talk: *The scale of homogeneity of the galaxy distribution in SDSS DR6*

University of Alabama, Astronomy Journal Club 02/20/2009
Talk: *Search for high-energy muon neutrinos from the "naked-eye" GRB 080319B with the IceCube neutrino telescope*

University of Alabama, Astronomy Journal Club 11/07/2008
Talk: *Unsaturated Low-Ionization Broad Absorption Lines in the Quasar SDSS J144842.45+042403*

SERVICE/LEADERSHIP

Elected IceCube Early Career Scientists (ECS) Representative 02/01/2017 – present
(representing ~180 IceCube ECS members from 12 countries; two seats in total)

Chair, WIPAC Group Meeting 02/2017 – present
(facilitating scientific communications among IceCube, HAWC, and ARA collaborations)

Organizer, chair, IceCube Summer Bootcamp 2016 06/2016
(trained ~40 IceCube new members globally)

Co-founder, chair, WIPAC X-Meeting 02/2016 – present
(weekly postdoc & grad students meeting, steady participants ~25)

University of Alabama, New Graduate Student Orientation 07/16/2011

EDUCATION & OUTREACH

Wisconsin Science Festival – "*Curiosity Unleashed*" 11/2017

UW-Madison Physics Fair – "*The Wonder of Physics"* 02/2017

WIPAC – "*Expanding Your Horizon for Middle School Girls"* 11/2016

WIPAC – *"IceCube Masterclass for High Schoolers"* 07/2016

WIPAC – IceCube Zooniverse with citizens on "Discovering Tau Neutrinos in IceCube" 06/2016

UW-Madison Physics Fair – "*The Wonder of Physics"* 02/2016

Wisconsin Science Festival – "*Bring the Universe to Madison"* 10/2015

University of Science and Technology of China,
Annual Science & Technology Public Week 03/2008

ARTS ACTIVITIES

University of Alabama, Chinese Spring Festival Gala 2011 12/2011 – 01/2012
Chinese traditional Dai dance: *In the Mood for Spring*
Choreographer and Performer
http://www.youtube.com/watch?v=AhVZVmdg0uA]

University of Alabama, Chinese Spring Festival Gala 2009 12/2008 – 02/2009
Art Director

SELECTED PUBLICATIONS

1. IceCube Collaboration: *A Search for High-energy Neutrino Emission from Fast Radio Bursts with 6 Years of IceCube Data,* accepted for publication in The Astrophysical Journal, [arXiv:1712.06277]

2. S. Fahey, A. Kheirandish, J. Vandenbroucke and D. Xu. *A search for neutrinos from fast radio bursts with IceCube.* **The Astrophysical Journal 845 (2017) 1, 14**; [arXiv:1611.03062 [astro-ph.HE]]

3. IceCube Collaboration: *Search for Astrophysical Tau Neutrinos in Three Years of IceCube Data.* **Physical Review D93 (2016) 022001, 12** January 2016 [arXiv:1509.06212 [astro-ph.HE]]

4. Sam Fahey, Justin Vandenbroucke and Donglian Xu for the IceCube Collaboration: *Search for High energy Neutrino Emission from Fast Radio Bursts.* Proceedings of the 35th International Cosmic Ray Conference, Busan, South Korea, 11-20 July 2017. [arXiv:1710.01179]

5. Sandro Kopper, Maximilian Meier, Logan Wille and Donglian Xu for the IceCube Collaboration: *Search for Astrophysical Tau Neutrinos with the IceCube Waveforms.* Proceedings of the 35th International Cosmic Ray Conference, Busan, South Korea, 11-20 July 2017. [arXiv:1710.01191]

6. Donglian Xu, for the IceCube Collaboration: *Exploring the Universe with Neutrinos: Recent Results from IceCube.* Proceedings of the the 14th International Workshop on Tau Lepton Physics. [arXiv:1702.05244]

7. Donglian Xu, for the IceCube Collaboration: *Search for Astrophysical Tau Neutrinos with IceCube.* Proceedings of the 38th International Conference on High Energy Physics. [arXiv:1702.05238]

8. Donglian Xu, Dawn Williams and Pavel Zarzhitsky for the IceCube Collaboration: *Detecting Tau Neutrinos in IceCube with Double Pulses.* Proceedings of the 33rd International Cosmic Ray Conference, Rio de Janeiro, Brazil, 2-9 July 2013. [arXiv:1309.7003]

9. S. Euler, L. Gladstone, J. Koskinen and D. Xu for the IceCube Collaboration: *Atmospheric Neutrino Oscillations with DeepCore.* Proceeding of the 32nd International Cosmic Ray Conference, Beijing, China, 11-18 August 2011. [arXiv:1111.2731[astro-ph.IM]]

OTHER PUBLICATIONS WITH ICECUBE

1. IceCube Collaboration: M. G. Aartsen et al. *Observation of High Energy Astrophysical Neutrinos in Three Years of IceCube Data.* **Physical Review Letter 113 (2014) 101101**, 2 September 2014 [arXiv:1405.5303 [astro-ph.HE]]

2. IceCube Collaboration: M. G. Aartsen et al. *Evidence for High-Energy Extraterrestrial Neutrinos at the IceCube Detector.* **Science 342 (2013) 1242856**, 22 November 2013 [arXiv:1311.5238 [astro-ph.HE]]

3. IceCube Collaboration: R. Abbasi et al. *First Observation of PeV-energy Neutrinos with IceCube.* **Physical Review Letter 111 (2013) 021103**

4. IceCube Collaboration: R. Abbasi et al. *A Search for Ultrahigh Energy Tau Neutrinos with IceCube.* **Physical Review D86 (2012) 022005**, 26 July 2012 [arXiv:1202.4564 [astro-ph.HE]]

5. IceCube Collaboration: R. Abbasi et al. *Measurement of Atmospheric Neutrino Oscillations with IceCube.* **Phys. Rev. Lett. 111, 081801 (2013)**

6. IceCube Collaboration: M. G. Aartsen et al. *Measurement of the Atmospheric ν_e Flux in IceCube.* **Phys. Rev. Lett. 110 (2013) 151105**, 10 April 2013 [arXiv:1212.4760 [hep-ex]]

7. IceCube Collaboration: R. Abbasi et al. *An Absence of Neutrinos Associated with Cosmic Ray Acceleration in Gamma-Ray Bursts.* **Nature 484 (2012), 351-354**

8. IceCube Collaboration: R. Abbasi et al. *Observation of Anisotropy in the Galactic Cosmic-Ray Arrival Directions at 400 TeV with IceCube.* **Astrophysical Journal 746 (2012) 33**, 10 February 2012 [arXiv:1109.1017 [hep-ex]]

9. IceCube and ROTSE Collaboration: R. Abbasi et al. *Searching for Soft Relativistic Jets in Core-collapse Supernovae with the IceCube Optical Follow-up Program.* **Astronomy and Astrophysics 539 (2012) A60**, March 2012 [arXiv:1111.7030 [astro-ph.HE]]

10. IceCube Collaboration: R. Abbasi et al. *Searches for Periodic Neutrino Emission from Binary Systems with 22 and 40 strings of IceCube.* **Astrophysical Journal 748 (2012) 118**, 1 April 2012 [arXiv:1108.3023 [astro-ph.HE]]

11. IceCube Collaboration: R. Abbasi et al. *The Design and Performance of IceCube DeepCore.* **Astroparticle Physics 35**

(2012) 615-624, May 2012 [arXiv:1109.6096 [astro- ph.IM]]

12. IceCube Collaboration: R. Abbasi et al. *IceCube Sensitivity for Low-Energy Neutrinos from Nearby Supernovae.* **Astronomy and Astrophysics 535 (2011) A109**, November 2011 [arXiv:1108.0171 [astro-ph.HE]]

13. IceCube Collaboration: R. Abbasi et al. *Search for Neutrinos from Annihilating Dark Matter in the Direction of the Galactic Center with the 40-String IceCube Neutrino Observatory.* [arXiv:1210.3557 [astro-ph.HE]], 12 October 2012

14. IceCube Collaboration: M. G. Aartsen et al. *Observation of Cosmic Ray Anisotropy with the IceTop Air Shower Array.* **Astrophysical Journal 765 (2013) 55**, 1 March 2013 [arXiv:1210.5278 [astro-ph.HE]]

15. P. Scott, C. Savage, J. Edsjö and the IceCube Collaboration: R. Abbasi et al. *Use of Event-Level Neutrino Telescope Data in Global Fits for Theories of New Physics.* **Journal of Cosmology and Astroparticle Physics 11 (2012) 057**, November 2012 [arXiv:1207.0810 [hep-ph]]

16. IceCube Collaboration: R. Abbasi et al. *Lateral Distribution of Muons in IceCube Cosmic Ray Events.* **Physical Review D87 (2013) 012005**, 7 January 2013 [arXiv:1208.2979 [astro-ph.HE]]

17. IceCube Collaboration: R. Abbasi et al. *Search for Relativistic Magnetic Monopoles with IceCube.* **Physical Review D87 (2013) 022001**, 18 January 2013 [arXiv:1208.4861 [astro-ph.HE]]

18. IceCube Collaboration: R. Abbasi et al. *Searches for High-Energy Neutrino Emission in the Galaxy with the Combined IceCube-AMANDA Detector.* **Astrophysical Journal 763 (2013) 33**, 20 January 2013 [arXiv:1210.3273 [astro-ph.HE]]

19. IceCube Collaboration: R. Abbasi et al. *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 [astro-ph.HE]]

20. IceCube Collaboration: R. Abbasi et al. IceTop: *The Surface Component of IceCube.* **Nuclear Instruments and Methods A700 (2013) 188-220**, 1 February 2013 [arXiv:1207.6326 [astro-ph.IM]]

21. IceCube Collaboration: R. Abbasi et al. *An Improved Method for Measuring Muon Energy Using the Truncated Mean of dE/dx.* **Nuclear Instruments and Methods A703 (2013) 190-198**, 1 March 2013 [arXiv:1208.3430 [physics.data-an]]

22. IceCube Collaboration: M. G. Aartsen et al. *Search for Galactic PeV Gamma Rays with the IceCube Neutrino Observatory.* **Physical Review D87 (2013) 062002**, 20 March 2013 [arXiv:1210.7992 [astro-ph.HE]]

23. IceCube Collaboration: M. G. Aartsen et al. *Search for Dark Matter Annihilations in the Sun with the 79-string IceCube Detector.* **Phys. Rev. Lett. 110 (2013) 131302**, 28 March 2013 [arXiv:1212.4097 [astro-ph.HE]]

24. IceCube Collaboration: R. Abbasi et al. *All-Particle Cosmic Ray Energy Spectrum Measured with 26 IceTop Stations.* **Astroparticle Physics 44 (2013) 40-58**, April 2013 [arXiv:1202.3039 [astro-ph.HE]]

25. IceCube Collaboration: M. G. Aartsen et al. *Measurement of South Pole Ice Transparency with the IceCube LED Calibration System.* **Nuclear Instruments and Methods A711 (2013) 73-89**, 21 May 2013 [arXiv:1301.5361 [astro-ph.IM]]

26. IceCube Collaboration: M. G. Aartsen et al. *Observation of the cosmic-ray shadow of the moon with IceCube.* 29 May, 2013 [arXiv:1305.6811]

27. IceCube Collaboration: M. G. Aartsen et al. *An IceCube Search for Dark Matter Annihilation in Nearby Galaxies and Galaxy Clusters.* **Physical Review D88 (2013) 122001**, 6 December 2013 [arXiv:1307.3473 [astro-ph.HE]]

28. IceCube Collaboration: M. G. Aartsen et al. *Probing the Origin of Cosmic Rays with Extremely High Energy Neutrinos Using the IceCube Observatory.* **Physical Review D88 (2013) 112008**, 16 December 2013 [arXiv:1310.5477 [astro-ph.HE]]

29. IceCube Collaboration: M. G. Aartsen et al. *Search for Time-Independent Neutrino Emission from Astrophysical Sources with 3 yr of IceCube Data.* **Astrophysical Journal 779 (2013) 132**, 20 December 2013 [arXiv:1307.6669 [astro-ph.HE]]

30. IceCube Collaboration: M. G. Aartsen et al. *Improvement in Fast Particle Track Reconstruction with Robust Statistics.* **Nuclear Instruments and Methods A736 (2014) 143-149**, 1 February 2014 [arXiv:1308.5501 [astro-ph.IM]]

31. IceCube Collaboration: M. G. Aartsen et al. *Energy Reconstruction Methods in the IceCube Neutrino Telescope.* **Journal of Instrumentation 9 (2014) P03009**, March 2014 [arXiv:1311.4767 [physics.ins-det]]

32. IceCube Collaboration: M. G. Aartsen et al. *Search for a Diffuse Flux of Astrophysical Muon Neutrinos with the IceCube 59-string Configuration.* **Physical Review D89 (2014) 062007**, 25 March 2014 [arXiv:1311.7048 [astro-ph.HE]]

33. IceCube Collaboration: M. G. Aartsen et al. *Search for Neutrino-Induced Particle Showers with IceCube-40.* **Physical Review D89 (2014) 102001**, 1 May 2014 [arXiv:1312.0104 [astro-ph.HE]]

34. IceCube Collaboration: M. G. Aartsen et al. *Observation of the Cosmic-Ray Shadow of the Moon with IceCube.* **Physical Review D89 (2014) 102004**, 28 May 2014 [arXiv:1305.6811 [astro-ph.HE]]

35. IceCube Collaboration: M. G. Aartsen et al. *Search for Non-Relativistic Magnetic Monopoles with IceCube.* **European Physical Journal C74 (2014) 2938**, July 2014 [arXiv:1402.3460 [astro-ph.CO]]

36. The IceCube, LIGO and Virgo Collaborations: M. G. Aartsen et al. *Multimessenger Search for Sources of Gravitational Waves and High-Energy Neutrinos: Results for Initial LIGO-Virgo and IceCube. Physical Review D90 (2014) 102002*, 17 November 2014 [arXiv:1407.1042 [astro-ph.HE]]

37. IceCube Collaboration: M. G. Aartsen et al. *Searches for Extended and Point-like Neutrino Sources with Four Years of IceCube Data.* **Astrophysical Journal 796 (2014) 109**, 1 December 2014 [arXiv:1406.6757 [astro-ph.HE]]

38. IceCube Collaboration: M. G. Aartsen et al. *Determining Neutrino Oscillation Parameters from Atmospheric Muon Neutrino Disappearance with Three Years of IceCube DeepCore Data.* **Physical Review D91 (2015) 072004**, 7 April 2015 [arXiv:1410.7227 [hep-ex]]

39. IceCube Collaboration: M. G. Aartsen et al. *Flavor Ratio of Astrophysical Neutrinos above 35 TeV in IceCube.* **Physical Review Letters 114 (2015) 171102**, 28 April 2015 [arXiv:1502.03376 [astro-ph.HE]]

40. IceCube Collaboration: M. G. Aartsen et al. *Search for Prompt Neutrino Emission from Gamma-Ray Bursts with IceCube.* **Astrophysical Journal Letters 805 (2015) L5**, 20 May 2015 [arXiv:1412.6510 [astro-ph.HE]]

41. IceCube Collaboration: M. G. Aartsen et al. *Searches for Small-Scale Anisotropies from Neutrino Point Sources with Three Years of IceCube Data.* **Astroparticle Physics 66 (2015) 39-52**, June 2015 [arXiv:1408.0634 [astro-ph.HE]]

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