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RESEARCH PROFILE

NSF Astronomy and Astrophysics Postdoctoral Fellow working in experimental particle astrophysics on the Askaryan Radio Array (ARA) and IceCube experiments. Interested in high-energy neutrino astronomy, specifically the construction, simulation, and data analysis of neutrino telescopes.

EDUCATION

Ph.D. in Physics, The Ohio State University, Columbus, Ohio USA — 2014-2019
Thesis: *Optimization of a Search for Ultra-High Energy Neutrinos in Four Years of Data of ARA Station 2*
Advisor: Prof. Amy Connolly

M.S. in Physics, The Ohio State University, Columbus, Ohio USA — 2014-2016

B.A. in Physics, Washington University in St. Louis, St. Louis, Missouri USA — 2010-2014
Thesis: *Calculating Bayesian Confidence Intervals with Stokes Parameters for use in Hard X-Ray Polarimetry*
Cum Laude, Advisor: Prof. Henric Krawczynski

FELLOWSHIPS and AWARDS

NSF Astronomy and Astrophysics Postdoctoral Fellowship	2019-2023
Japanese Society for the Promotion of Science Postdoctoral Fellowship	2022
NSF Graduate Research Fellowship	2016-2019
OSU Graduate Enrichment Fellowship	2014-2015
WUSTL Undergraduate Physics Research Fellow	2011
APS Division of Astrophysics Travel Award	2017, 2019
Bunny and Thomas Clark Graduate Scholarship Honorable Mention	2019

SELECTED PUBLICATIONS

It is the policy of the ARA and IceCube collaborations that authors be listed in alphabetical order. A full publication list is available at the end of the CV and at my ORCID or INSPIRE-HEP pages.

12. "toise: a framework to describe the performance of high-energy neutrino detectors"
J. van Santen, **B. A. Clark**, R. Halliday, S. Hallman, A. Nelles
Submitted to JINST. [arXiv:2202.11120]

11. "Simulation and Sensitivity for a phased IceCube-Gen2 deployment"
B. A. Clark, R. Halliday for the IceCube-Gen2 Collaboration
Proc. 37th International Cosmic Ray Conference PoS (ICRC2021)1186. [arXiv:2107.08500]

10. "Sensitivity Studies for the IceCube-Gen2 radio array"
S. Hallmann, **B. A. Clark**, C. Glaser, D. Smith for the IceCube-Gen2 Collaboration
Proc. 37th International Cosmic Ray Conference PoS (ICRC2021)1183. [arXiv:2107.08910]

9. "The IceCube-Gen2 Neutrino Observatory"
   B. A. Clark for the IceCube-Gen2 Collaboration
   Proc. 9th Very Large Volume Neutrino Telescope Workshop (VLVnT-2021). [arXiv:2108.05292]

8. "Design and Sensitivity of the Radio Neutrino Observatory in Greenland (RNO-G)"
   J.A. Aguilar *et al.* for the RNO-G Collaboration (incl. **B. A. Clark**)
   JINST 16 (2021) 03, P03025. [arXiv:2010.12279]

7. "Constraints on the diffuse flux of ultrahigh energy neutrinos from four years of Askaryan Radio Array Data in two stations"
   P. Allison *et al.* for the ARA Collaboration (incl. **B. A. Clark** as corresponding author)
   Physical Review D 102, 043021 (2020). [arXiv:1912.00987]

6. "Long-baseline horizontal radio-frequency transmission through polar ice"
   P. Allison *et al.* for the ARA Collaboration (incl. **B. A. Clark**)
   JCAP Vol 2020 No 12 Pg 009. [arXiv:1908.10689]

5. "NuRadioMC: Simulating the radio emission of neutrinos from interaction to detector"
   C. Glaser *et al.* (incl. **B. A. Clark**)
   European Physical Journal C 80, 77 (2020). [arXiv:1906.01670]

4. "Design and Performance of an Interferometric Trigger Array for Radio Detection of High-Energy Neutrinos"
   P. Allison *et al.* for the ARA Collaboration (incl. **B. A. Clark**)
   Nuclear Instruments and Methods A 930, 112-125 (2019). [arXiv:1809.04573]

3. "Observation of Reconstructable Radio Emission Coincident with an X-Class Solar Flare in the Askaryan Radio Array Prototype Station."
   P. Allison *et al.* for the ARA Collaboration (incl. **B. A. Clark** as corresponding author)
   Submitted to Astroparticle Physics. [arXiv:1807.03335]

2. "Measurement of the real dielectric permittivity ϵ_r of glacial ice."
   P. Allison *et al.* for the ARA Collaboration (incl. **B. A. Clark**)
   Astroparticle Physics Vol 108 Pg 63-73 (2019). [arXiv:1712.03301]

1. "Analyzing the Data from X-ray Polarimeters with Stokes Parameters."
   F. Kislat, **B. Clark**, M. Bielicke, H. Krawczynski.
   Astroparticle Physics 68, 45-51 (2015). [arXiv:1409.6214]

RESEARCH EXPERIENCE

Michigan State University, East Lansing, MI USA **August 2019 - present**
Postdoctoral Fellow

- Led the latest ARA search for UHE neutrinos, producing the strongest limit by an in-ice radio detector and observing the first UHECR candidate events in ARA.
- Optimized the geometry of the IceCube-Gen2 optical and radio arrays for maximum physics reach—included performing and evaluating simulations from beginning to end.
- Evaluated the reconstruction capability of ARA stations for the first time, including estimating the resolution on signal polarization and deposited shower energy.
- Developed Monte Carlo simulation tools for use in the neutrino community, including a world's-fastest radio signal propagation code and maintenance of a high-energy shower simulation tool.
- Member of the ARA, IceCube, and RNO-G collaborations. Served as analysis convener for ARA ($\sim$ 60 person collaboration). Led of the MSU IceCube Machine Learning Subgroup (3 graduate and 6 undergraduate students). Coordinated ARA analysis "bootcamp" ($\sim$ 25 attendees).

RESEARCH EXPERIENCE (cont.)

The Ohio State University, Columbus, OH USA — **August 2014 - July 2019**

Ph.D. Student

- Developed frequency and time-series analysis techniques to analyze radio emission from solar flares in the ARA prototype station; this is the first extraterrestrial emission observed by the array.
- Implemented filtering techniques to remove human-made noise from ARA data, and utilized them in a search for a diffuse flux of ultra-high energy neutrinos.
- Developed, built, and tested printed circuit boards for RF signal conditioning and power distribution, improving instrument dynamic range and operability in harsh environments.
- Led and directed the mechanical and electrical systems integration of three new neutrino detecting stations, including the management of a three person team of junior students.
- Deployed to Antarctica for five weeks to lead the commissioning and calibration of five neutrino detecting stations; performed rapid on site assessment of instrument performance.
- Member of the ARA collaboration; led ARA operations coordination for one year.

Washington University in St. Louis, St. Louis, MO USA — **October 2012 - May 2014**

Undergraduate Research Associate

- Member of the X-Calibur collaboration to detect x-rays in the upper atmosphere, including fabrication of CCDs in a cleanroon environment.
- Wrote Monte Carlo simulations to explore Stokes parameters in x-ray astronomy by using methods of Bayesian confidence intervals.

TEACHING EXPERIENCE

The Ohio State University, Columbus, OH

TA Training Facilitator, University Center for the Advancement Teaching — **August 2016**

- Facilitated two-day "introduction to teaching and learning" workshop for 30 first-time Teaching Assistants across the University's 40 STEM science programs.
- Built confidence in new TAs, guided development of teaching identities, addressed diversity in the classroom, and aided participant planning for long-term classroom success.

Teaching Assistant–"Astronomy 1143: Stars, Galaxies, and Cosmology" — **Spring 2016**

- Aided student learning by teaching review sessions and lecturing when lead faculty was absent for 80 student introductory survey course, open to students across the university
- Moderated online forum, in collaboration with lead faculty, for students to exchange questions and clarify concepts.

Teaching Assistant–"Physics 1251: E&M, Optics, and Quantum Mechanics" — **Fall 2015**

- Guided student learning in the recitation and laboratory context for four contact hours per week.
- Facilitated quantitative laboratory experiments including team-based problem solving exercises.
- Designed rubrics for fair, efficient, and consistent grading of quiz and examination instruments.

SCIENTIFIC TALKS & POSTERS

Invited Talks

7. HEP Seminar, Univ. of Maryland, College Park MD — 2022/02/23
6. Physics Colloquium, Drexel University, Philadelphia PA — 2022/02/17
5. Physics & Astronomy Colloquium, Univ. of Delaware, Newark DE — 2022/02/09
4. Physics & Astronomy Colloquium, Univ. of Kansas, Lawrence KS — 2021/11/22
3. Plenary, Very Large Volume Neutrino Telescopes 2021 — 2021/05/19
2. Astronomy Seminar, Michigan State Univ., East Lansing MI — 2019/10/23
1. Physics Colloquium, College of Wooster, Wooster OH — 2016/10/04

Contributed Talks & Posters

15. International Cosmic Ray Conference 2021 — 2021/07/20
14. APS April Meeting 2021 — 2021/04/19
13. 19th Annual AAPF Symposium — 2021/02/09
12. NEUTRINO 2020 — 2020/06/21
11. 18th Annual AAPF Symposium at the 235th AAS Meeting, Honolulu HI. — 2020/01/04
10. OSU CCAPP Seminar, Columbus OH. — 2019/07/16
9. APS April Meeting 2019, Denver CO — 2019/04/15
8. Ohio Section of the APS Fall 2018 Meeting, Toledo OH. — 2018/09/29
7. OSU CCAPP Seminar, Columbus OH — 2018/05/22
6. APS April Meeting 2018, Columbus OH — 2018/04/16
5. TeV Particle Astrophysics, Columbus OH — 2017/08/11
4. APS April Meeting 2017, Washington DC — 2017/01/31
3. Computing in High Energy Astropart. Phys. Research 2016, Columbus OH. — 2016/05/26
2. OSU Physics Summer Seminar Series, Columbus OH — 2016/04/23
1. Ohio Section of the APS Spring 2016 Meeting, Dayton OH — 2016/04/09

MENTORSHIP

Graduate Students: Lauren Ennesser, Hieu Le, Keith McBride, Andrés Medina, Jessie Micallef, Julie Rolla, Jorge Torres-Espinosa

Undergraduate Students: Suren Gourapura, Emma Hettinger, Hannah Hassan, Jessica Kienbaum, Elizabeth Kowalczyk, Spoorthi Nagasmudram, Victoria Niu, Le Nguyen, Brandon Pries, Jude Rajasekera, Lucas Smith

High School Students: Addison Hartman, Natalie Keyes

SERVICE and OUTREACH

Early Career Scientists Representative, the IceCube Collaboration	January 2021-Present
Physics Climate and Diversity Committee, OSU	January 2017-May 2018
Officer, Physics Graduate Student Council, OSU	October 2014-May 2017

Talk, MSU Science Festival	April 2021
Talk, Making Space for All	June 2020
Talk, Astronomy on Tap Lansing	October 2019, August 2021
Coordinator for ASPIRE Workshop for High School Women, OSU	July 2015-June 2019
Volunteer Judge, Ohio State Science Day	2015-2019
Talk, Columbus Science Pub	May 2018
Talk, The Wellington School, Columbus, OH	April 2018
Volunteer Judge, OSU Denman Undergraduate Research Forum	2016

FULL PUBLICATION LIST

80. R. Abbasi et al. "Improved Characterization of the Astrophysical Muon-Neutrino Flux with 9.5 Years of IceCube Data". In: (Nov. 2021). arXiv: `2111.10299 [astro-ph.HE]`.

79. R. Abbasi et al. "A search for neutrino emission from cores of Active Galactic Nuclei". In: (Nov. 2021). arXiv: `2111.10169 [astro-ph.HE]`.

78. R. Abbasi et al. "Search for GeV-scale Dark Matter Annihilation in the Sun with IceCube DeepCore". In: (Nov. 2021). arXiv: `2111.09970 [astro-ph.HE]`.

77. R. Abbasi et al. "Search for Quantum Gravity Using Astrophysical Neutrino Flavour with IceCube". In: (Nov. 2021). arXiv: `2111.04654 [hep-ex]`.

76. R. Abbasi et al. "Search for Relativistic Magnetic Monopoles with Eight Years of IceCube Data". In: (Sept. 2021). arXiv: `2109.13719 [astro-ph.HE]`.

75. R. Abbasi et al. "Search for Multi-flare Neutrino Emissions in 10 yr of IceCube Data from a Catalog of Sources". In: *Astrophys. J. Lett.* 920.2 (2021), p. L45. DOI: `10.3847/2041-8213/ac2c7b`. arXiv: `2109.05818 [astro-ph.HE]`.

74. V. A. Acciari et al. "Searching for VHE gamma-ray emission associated with IceCube neutrino alerts using FACT, H.E.S.S., MAGIC, and VERITAS". In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 960. DOI: `10.22323/1.395.0960`. arXiv: `2109.04350 [astro-ph.HE]`.

73. B. Clark. "The IceCube-Gen2 Neutrino Observatory". In: *Proc. 9th Very Large Volume Neutrino Telescopes Workshop 2021*. Vol. 16. 10. IOP Publishing, 2021, p. C10007. DOI: `10.1088/1748-0221/16/10/c10007`. arXiv: `2108.05292 [astro-ph.HE]`. URL: `https://doi.org/10.1088/1748-0221/16/10/c10007`.

72. Y. Pan et al. "A neural network based UHE neutrino reconstruction method for the Askaryan Radio Array (ARA)". In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 1057. DOI: `10.22323/1.395.1057`.

71. K. Hughes et al. "Implementing a Low-Threshold Analysis with the Askaryan Radio Array (ARA)". In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 1053. DOI: `10.22323/1.395.1053`.

70. P. Allison et al. "A Template-based UHE Neutrino Search Strategy for the Askaryan Radio Array (ARA)". In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 1047. DOI: `10.22323/1.395.1047`.

69. P. Dasgupta et al. "The Calibration of the Geometry and Antenna Delay in Askaryan Radio Array Station 4 and 5". In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 1086. DOI: 10.22323/1.395.1086.
68. R. Abbasi et al. "Concept Study of a Radio Array Embedded in a Deep Gen2-like Optical Array". In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 1182. DOI: 10.22323/1.395.1182.
67. I. Plaisier et al. "Direction Reconstruction for the Radio Neutrino Observatory Greenland (RNO-G)". In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 1026. DOI: 10.22323/1.395.1026.
66. J. A. Aguilar et al. "Hardware Development for the Radio Neutrino Observatory in Greenland (RNO-G)". In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 1058. DOI: 10.22323/1.395.1058.
65. H. Ayala et al. "Multimessenger NuEM Alerts with AMON". In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 958. DOI: 10.22323/1.395.0958. arXiv: 2108.04920 [astro-ph.HE].
64. R. Abbasi et al. "Simulation study for the future IceCube-Gen2 surface array". In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 411. DOI: 10.22323/1.395.0411. arXiv: 2108.04307 [astro-ph.HE].
63. R. Abbasi et al. "Searching for Neutrino Transients Below 1 TeV with IceCube". In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 1131. DOI: 10.22323/1.395.1131. arXiv: 2108.01530 [astro-ph.HE].
62. F. G. Schroeder et al. "The Surface Array planned for IceCube-Gen2". In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 407. DOI: 10.22323/1.395.0407. arXiv: 2108.00364 [astro-ph.HE].
61. R. Abbasi et al. "Characterization of the PeV astrophysical neutrino energy spectrum with IceCube using down-going tracks". In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 1137. DOI: 10.22323/1.395.1137. arXiv: 2107.14298 [astro-ph.HE].
60. R. Abbasi et al. "Search for dark matter from the center of the Earth with 8 years of IceCube data". In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 526. DOI: 10.22323/1.395.0526.
59. R. Abbasi et al. "Search for dark matter annihilation in the center of the Earth with 8 years of IceCube data". In: *PoS* ICRC2019 (July 2019): *Proc. 37th International Cosmic Ray Conference*, p. 541. DOI: 10.22323/1.395.1131. arXiv: 1908.07255 [astro-ph.HE].
58. R. Abbasi et al. "Searching for time-dependent high-energy neutrino emission from X-ray binaries with IceCube". In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 1136. DOI: 10.22323/1.395.1136. arXiv: 2107.12383 [astro-ph.HE].
57. E. Bechtol et al. "Towards Equitable, Diverse, and Inclusive science collaborations: The Multimessenger Diversity Network". In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 1383. DOI: 10.22323/1.395.1383. arXiv: 2107.12179 [physics.ed-ph].
56. R. Abbasi et al. "Reconstructing Neutrino Energy using CNNs for GeV Scale IceCube Events". In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 1053. DOI: 10.22323/1.395.1053. arXiv: 2107.11446 [astro-ph.HE].
55. R. Abbasi et al. "Gravitational Wave Follow-Up Using Low Energy Neutrinos in IceCube DeepCore". In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 939. DOI: 10.22323/1.395.0939. arXiv: 2107.11285 [astro-ph.HE].

54. R. Abbasi et al. “Discrimination of muons for mass composition studies of inclined air showers detected with IceTop”. In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 212. DOI: 10.22323/1.395.0212. arXiv: 2107.11293 [astro-ph.HE].

53. R. Abbasi et al. “New Flux Limits in the Low Relativistic Regime for Magnetic Monopoles at IceCube”. In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 212. DOI: 10.22323/1.395.0534. arXiv: 2107.10548 [astro-ph.HE].

52. L. Halve et al. “Design of an Efficient, High-Throughput Photomultiplier Tube Testing Facility for the IceCube Upgrade”. In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 1056. DOI: 10.22323/1.395.1056. arXiv: 2107.09954 [astro-ph.HE].

51. J. Necker et al. “Searching for High-Energy Neutrinos from Core-Collapse Supernovae with IceCube”. In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 1116. DOI: 10.22323/1.395.1116. arXiv: 2107.09317 [astro-ph.HE].

50. S. Verpoest et al. “Testing Hadronic Interaction Models with Cosmic Ray Measurements at the IceCube Neutrino Observatory”. In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 357. DOI: 10.22323/1.395.0357. arXiv: 2107.09387 [astro-ph.HE].

49. D. Veske et al. “Multi-messenger searches via IceCube’s high-energy neutrinos and gravitational-wave detections of LIGO/Virgo”. In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 950. DOI: 10.22323/1.395.0950. arXiv: 2107.09663 [astro-ph.HE].

48. A. Pizzuto et al. “Realtime follow-up of astrophysical transients with the IceCube Neutrino Observatory”. In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 952. DOI: 10.22323/1.395.0952. arXiv: 2107.09551 [astro-ph.HE].

47. R. Abbasi et al. “Study of Mass Composition of Cosmic Rays with IceTop and IceCube”. In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 323. DOI: 10.22323/1.395.0323. arXiv: 2107.09626 [astro-ph.HE].

46. R. Abbasi et al. “Measuring total neutrino cross section with IceCube at intermediate energies (∼100 GeV to a few TeV)”. In: (July 2021): *Proc. 37th International Cosmic Ray Conference*. arXiv: 2107.09764 [astro-ph.HE].

45. S. Hallmann, B. Clark, C. Glaser, and D. Smith. “Sensitivity studies for the IceCube-Gen2 radio array”. In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 1183. DOI: 10.22323/1.395.1183. arXiv: 2107.08910 [astro-ph.HE].

44. R. Abbasi et al. “First air-shower measurements with the prototype station of the IceCube surface enhancement”. In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 314. DOI: 10.22323/1.395.0314. arXiv: 2107.08750 [astro-ph.HE].

43. R. Abbasi et al. “Searches for Neutrinos from Precursors and Afterglows of Gamma-Ray Bursts using the IceCube Neutrino Observatory”. In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 1118. DOI: 10.22323/1.395.1118. arXiv: 2107.08870 [astro-ph.HE].

42. B. Clark and R. Halliday. “Simulation and sensitivities for a phased IceCube-Gen2 deployment”. In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 1186. DOI: 10.22323/1.395.1186. arXiv: 2107.08500 [astro-ph.HE].

41. R. Abbasi et al. “Search for high-energy neutrino emission from hard X-ray AGN with IceCube”. In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 1142. DOI: 10.22323/1.395.1142. arXiv: 2107.08366 [astro-ph.HE].

40. A. Omeliukh et al. “Optimization of the optical array geometry for IceCube-Gen2”. In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 1184. DOI: 10.22323/1.395.1184. arXiv: 2107.08527 [astro-ph.HE].

39. R. Abbasi et al. "Analysis Framework for Multi-messenger Astronomy with IceCube". In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 1098. DOI: 10.22323/1.395.1098. arXiv: 2107.08254 [astro-ph.IM].

38. M. J. Larson et al. "Testing the AGN Radio and Neutrino correlation using the MOJAVE catalog and 10 years of IceCube Data". In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 949. DOI: 10.22323/1.395.094. arXiv: 2107.08115 [astro-ph.HE].

37. V. Basu et al. "A next-generation optical sensor for IceCube-Gen2". In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 1062. DOI: 10.22323/1.395.1062. arXiv: 2107.08837 [astro-ph.IM].

36. R. Abbasi et al. "Search for High-Energy Neutrinos from Ultra-Luminous Infrared Galaxies with IceCube". In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 1115. DOI: 10.22323/1.395.1115. arXiv: 2107.03149 [astro-ph.HE].

35. J. A. Aguilar et al. "Reconstructing the neutrino energy for in-ice radio detectors: A study for the Radio Neutrino Observatory Greenland (RNO-G)". In: (July 2021). arXiv: 2107.02604 [astro-ph.HE].

34. R. Abbasi et al. "All-flavor constraints on nonstandard neutrino interactions and generalized matter potential with three years of IceCube DeepCore data". In: *Phys. Rev. D* 104.7 (2021), p. 072006. DOI: 10.1103/PhysRevD.104.072006. arXiv: 2106.07755 [hep-ex].

33. R. Abbasi et al. "Probing neutrino emission at GeV energies from compact binary mergers with the IceCube Neutrino Observatory". In: (May 2021). arXiv: 2105.13160 [astro-ph.HE].

32. R. Abbasi et al. "A muon-track reconstruction exploiting stochastic losses for large-scale Cherenkov detectors". In: *JINST* 16.08 (2021), P08034. DOI: 10.1088/1748-0221/16/08/P08034. arXiv: 2103.16931 [hep-ex].

31. R. Abbasi et al. "A Convolutional Neural Network based Cascade Reconstruction for the IceCube Neutrino Observatory". In: *JINST* 16.07 (2021), P07041. DOI: 10.1088/1748-0221/16/07/p07041. arXiv: 2101.11589 [hep-ex].

30. R. Abbasi et al. "IceCube Data for Neutrino Point-Source Searches Years 2008-2018". In: (Jan. 2021). DOI: 10.21234/CPKQ-K003. arXiv: 2101.09836 [astro-ph.HE].

29. R. Abbasi et al. "Search for GeV neutrino emission during intense gamma-ray solar flares with the IceCube Neutrino Observatory". In: *Phys. Rev. D* 103.10 (2021), p. 102001. DOI: 10.1103/PhysRevD.103.102001. arXiv: 2101.00610 [astro-ph.HE].

28. J. A. Aguilar et al. "The Radio Neutrino Observatory Greenland (RNO-G)". In: *PoS* ICRC2021 (July 2021): *Proc. 37th International Cosmic Ray Conference*, p. 001. DOI: 10.22323/1.395.0001.

27. R. Abbasi et al. "LeptonInjector and LeptonWeighter: A neutrino event generator and weighter for neutrino observatories". In: *Comput. Phys. Commun.* 266 (2021), p. 108018. DOI: 10.1016/j.cpc.2021.108018. arXiv: 2012.10449 [physics.comp-ph].

26. R. Abbasi et al. "Follow-up of Astrophysical Transients in Real Time with the IceCube Neutrino Observatory". In: *Astrophys. J.* 910.1 (2021), p. 4. DOI: 10.3847/1538-4357/abe123. arXiv: 2012.04577 [astro-ph.HE].

25. R. Abbasi et al. "A Search for Time-dependent Astrophysical Neutrino Emission with IceCube Data from 2012 to 2017". In: *Astrophys. J.* 911.1 (2021), p. 67. DOI: 10.3847/1538-4357/abe7e6. arXiv: 2012.01079 [astro-ph.HE].

24. R. Abbasi et al. "Search for sub-TeV neutrino emission from transient sources with three years of IceCube data". In: (Nov. 2020). arXiv: 2011.05096 [astro-ph.HE].

23. R. Abbasi et al. "Measurement of the high-energy all-flavor neutrino-nucleon cross section with IceCube". In: *Phys. Rev. D* 104.2 (July 2021), p. 022001. DOI: 10.1103/PhysRevD.104.022001. arXiv: 2011.03560 [hep-ex].

22. R. Abbasi et al. "The IceCube high-energy starting event sample: Description and flux characterization with 7.5 years of data". In: *Phys. Rev. D* 104.2 (July 2021), p. 022002. DOI: 10.1103/PhysRevD.104.022002. arXiv: 2011.03545 [astro-ph.HE].

21. R. Abbasi et al. "Measurement of Astrophysical Tau Neutrinos in IceCube's High-Energy Starting Events". In: (Nov. 2020). arXiv: 2011.03561 [hep-ex].

20. J. A. Aguilar et al. "Design and Sensitivity of the Radio Neutrino Observatory in Greenland (RNO-G)". In: *JINST* 16.03 (2021), P03025. DOI: 10.1088/1748-0221/16/03/P03025. arXiv: 2010.12279 [astro-ph.IM].

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