

BRIAN A. CLARK

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RESEARCH PROFILE

Assistant Professor of Physics, working in experimental particle astrophysics on the Askaryan Radio Array (ARA), IceCube, and Radio Neutrino Observatory (RNO-G) experiments. Interested in high-energy neutrino astronomy, specifically the construction, simulation, and data analysis of neutrino telescopes.

ACADEMIC APPOINTMENTS

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| Assistant Professor The University of Maryland, College Park, MD USA | 2023-Present |
| NSF Astronomy and Astrophysics Postdoctoral Fellow Michigan State University, East Lansing, MI USA | 2019-2022 |
| NSF Graduate Research Fellow The Ohio State University, Columbus, OH USA | 2016-2019 |
| Teaching Assistant The Ohio State University, Columbus, OH USA | 2015-2016 |

EDUCATION

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| Ph.D. in Physics, The Ohio State University , Columbus, Ohio USA Thesis: <i>Optimization of a Search for Ultra-High Energy Neutrinos in Four Years of Data of ARA Station 2</i> Advisor: Prof. Amy Connolly | 2014-2019 |
| 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 <i>Cum Laude</i> , Advisor: Prof. Henric Krawczynski | 2010-2014 |

FELLOWSHIPS and AWARDS

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| 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 (h-index = 24)

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. “A low-threshold ultrahigh-energy neutrino search with the Askaryan Radio Array”
P. Allison *et al.* for the ARA Collaboration (incl. **B. A. Clark**)
Physical Review D 105, 122006 (2022). [arXiv:2202.07080]
11. “toise: a framework to describe the performance of high-energy neutrino detectors”
J. van Santen, **B. A. Clark**, R. Halliday, S. Hallman, A. Nelles
JINST 17 (2022) T08009. [arXiv:2202.11120]
10. “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]
9. “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]
8. “The IceCube-Gen2 Neutrino Observatory”
B. A. Clark for the IceCube-Gen2 Collaboration
JINST 16 (2021) C10007, Proc. 9th Very Large Volume Neutrino Telescope Workshop (VLVnT-2021). [arXiv:2108.05292]
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—including 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 (~ 60 person collaboration). Led of the MSU IceCube Machine Learning Subgroup (3 graduate and 6 undergraduate students). Coordinated ARA analysis “bootcamp” (~ 25 attendees).

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 cleanroom environment.
- Wrote Monte Carlo simulations to explore Stokes parameters in x-ray astronomy by using methods of Bayesian confidence intervals.

SCIENTIFIC TALKS & POSTERS

Invited Talks

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| 11. Physics Colloquium, University of Virginia, Charlottesville VA | 2023/12/01 |
| 10. Seminar, Yale University Wright Lab, New Haven CT | 2023/05/04 |
| 9. Seminar, IIHE at VUB/ULB, Brussels BE | 2022/10/14 |
| 8. Plenary, 15th Intl. Conf. on Particle Phys and Cosmology (PPC), St. Louis MO | 2022/06/09 |
| 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

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| 18. Snowmass 2021 Community Summer Study, Seattle, WA | 2022/07/19 |
| 17. APS April Meeting 2022, New York NY | 2022/04/12 |
| 16. 20th Annual AAPF Symposium | 2022/01/10 |
| 15. International Cosmic Ray Conference 2021, Berlin Germany | 2021/07/20 |
| 14. APS April Meeting 2021 | 2021/04/19 |
| 13. 19th Annual AAPF Symposium | 2021/02/09 |
| 12. NEUTRINO 2020, Chicago IL | 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 |

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.

MENTORSHIP and ADVISING

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

LEADERSHIP and SERVICE

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| IceCube Collaboration Diffuse Working Group Convener | 2022-Present |
| ARA Analysis Coordinator | 2020-Present |
| ARA Operations Coordinator | 2018-2019 |

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| Subject-Matter Expert Reviewer in a NASA Peer Review | 2021-Present |
| Peer Reviewer, Journal of Astroparticle Physics | 2022-Present |
| Peer Reviewer, Journal of Instrumentation (JINST) | 2021-Present |

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| Early Career Scientists Representative, the IceCube Collaboration | January 2021-January 2023 |
| Physics Climate and Diversity Committee, OSU | January 2017-May 2018 |
| Officer, Physics Graduate Student Council, OSU | October 2014-May 2017 |

OUTREACH

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| 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].
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