

BRIAN A. CLARK

567 Wilson Rd Room 3243 *Phone:* (517) 884-5712
Biomed Phys Sci Building *Email:* baclark@msu.edu
Michigan State University *Website:* <https://icecube.wisc.edu/~brianclark/>
East Lansing, MI 48824 USA *OrcID / inSPIRE:* 0000-0003-4089-2245 / Brian.A.Clark.1

RESEARCH PROFILE

National Science Foundation Astronomy and Astrophysics Postdoctoral Fellow working in experimental particle-astrophysics on the Askaryan Radio Array 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
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
Cum Laude, Advisor: Prof. Henric Krawczynski

AWARDS

National Science Foundation Astronomy and Astrophysics Postdoctoral Fellowship 2019-2021
National Science Foundation Graduate Research Fellowship 2016-2019
APS Division of Astrophysics Travel Award 2017, 2019
Bunny and Thomas Clark Graduate Scholarship Honorable Mention 2019
OSU Graduate Enrichment Fellowship 2014-2015
WUSTL Undergraduate Physics Research Fellow Summer 2011

RESEARCH EXPERIENCE

Michigan State University, East Lansing, MI USA **August 2019 - present**
Postdoctoral Fellow
The Ohio State University, Columbus, OH USA **August 2014 - July 2019**
Ph.D. Student
Washington University in St. Louis, St. Louis, MO USA **October 2012 - May 2014**
Undergraduate Research Associate

PUBLICATIONS

7. “Constraints on the Diffuse Flux of Ultra-High 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)
Accepted to Physical Review D. [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**)
Submitted to Journal of Glaciology (2019). [arXiv:1908.10689]
5. “NuRadioMC: Simulating the radio emission of neutrinos from interaction to detector”
C. Glaser *et al.* (incl. **B. A. Clark**)
Eur. Phys. J. 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 Vol 930 Pg 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 (2018). [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 Vol 68 Pg 45-51 (2015). [arXiv:1409.6214]

SCIENTIFIC TALKS & POSTERS

National & International Conferences

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|-----------------------------------------------|------------|
| 6. NEUTRINO 2020, Chicago IL (virtual poster) | 2020/06/21 |
| 5. 235th AAS Meeting, Honolulu HI. | 2020/01/04 |
| 4. APS April Meeting, Denver CO. | 2019/04/15 |
| 3. APS April Meeting, Columbus OH. | 2018/04/16 |
| 2. TeV Particle Astrophysics, Columbus OH. | 2017/08/11 |
| 1. APS April Meeting, Washington DC. | 2017/01/31 |

Colloquia, Seminars, and Other Talks

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| 9. MSU Astronomy Seminar, East Lansing MI. | 2019/10/23 |
| 8. OSU CCAPP Seminar, Columbus OH. | 2019/07/16 |
| 7. Ohio Section of the APS Fall 2018 Meeting, Toledo OH. | 2018/09/29 |
| 6. OSU Physics Summer Seminar Series, Columbus OH. | 2018/06/26 |
| 5. OSU CCAPP Seminar, Columbus OH. | 2018/05/22 |
| 4. Colloquium, College of Wooster Physics Department, Wooster OH. | 2016/10/04 |
| 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 |

OUTREACH AND SERVICE

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| Talk, Making Space for All | June 2020 |
| Talk, Astronomy on Tap Lansing | October 2019 |
| Coordinator for ASPIRE Workshop for High School Women, OSU | July 2015-June 2019 |
| Volunteer Judge, Ohio State Science Day | 2015-2019 |
| Physics Climate and Diversity Committee, OSU | January 2017-May 2018 |
| Talk, Columbus Science Pub | May 2018 |

Talk, The Wellington School, Columbus, OH
Officer, Physics Graduate Student Council, OSU

April 2018
October 2014-May 2017

TEACHING

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

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

Undergraduate Students: Suren Gourapura*, Hannah Hassan*, Elizabeth Kowalczyk†, Spoorthi Nagasmudram*, Victoria Niu*, Brandon Pries†, Jude Rajasekera*, Lucas Smith*

High School Students: Addison Hartman*, Natalie Keyes*

*OSU, †MSU

REFERENCES

Amy Connolly

Professor of Physics
The Ohio State University
connolly@physics.osu.edu
614-292-4368

Dave Besson

Professor of Physics and Astronomy
The University of Kansas
zedlam@ku.edu
785-864-4741

James Beatty

Professor of Physics and Astronomy
The Ohio State University
beatty@mps.ohio-state.edu
614-247-8413