

# BRIAN A. CLARK

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## RESEARCH PROFILE

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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

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**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

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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

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**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

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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)  
 [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**)  
 Submitted to Eur. Phys. J. C (2019). [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  $\epsilon_r$  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. Kislal, **B. Clark**, M. Bielicke, H. Krawczynski.  
Astroparticle Physics Vol 68 Pg 45-51 (2015). [arXiv:1409.6214]

## SCIENTIFIC TALKS

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### National & International Conferences

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| 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, 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                  | April 2018            |
| Officer, Physics Graduate Student Council, OSU             | October 2014-May 2017 |

## TEACHING

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### **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

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

**Undergraduate Students:** Ian Best\*, Eliot Ferstl\*, Suren Gourapura\*, Hannah Hassan\*, Scott Janse\*, Spoorthi Nagasmudram\*, Victoria Niu\*, Alex Patton\*, Jude Rajasekera\*, Cade Sbrocco\*, Lucas Smith\*, Jason Torok\*

**High School Students:** Addison Hartman\*, Natalie Keyes\*

\*OSU, †MSU

## REFERENCES

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### **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