BRIAN A. CLARK

567 Wilson Rd Room 3243
Biomed Phys Sci Building
Michigan State University
East Lansing, MI 48824 USA

Phone: (517) 884-5712
Email: baclark@msu.edu
Website: `u.osu.edu/clark.2668`
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

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 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

National & International Conferences

4. APS April Meeting, Denver CO. 2019/04/15
   Searching for Neutrinos & Cosmic Rays and Studying Antarctic ice with Askaryan Radio Array.

3. APS April Meeting, Columbus OH. 2018/04/16
   Directional Reconstruction as a Means of Lowering Thresholds for Point-Source Searches in the Askaryan Radio Array.

2. TeV Particle Astrophysics, Columbus OH. 2017/08/11
   The Askaryan Radio Array: Current Status and Future Plans.

1. APS April Meeting, Washington DC. 2017/01/31
   Observation of Reconstructable Radio Waveforms from Solar Flares with Askaryan Radio Array.

Colloquia, Seminars, and Other Talks

8. OSU CCAPP Seminar, Columbus OH. 2019/07/16
   The Quest for Ultra-High Energy Neutrinos

7. Ohio Section of the APS Fall 2018 Meeting, Toledo OH. 2018/09/29
   Latest Results in the Search for Ultra-High Energy Neutrinos in the Askaryan Radio Array

6. OSU Physics Summer Seminar Series, Columbus OH. 2018/06/26
   Ultra-High Energy Neutrino Astrophysics with Radio-Based Detectors.

5. OSU CCAPP Seminar, Columbus OH. 2018/05/22
   The Askaryan Radio Array: Detector Status and Prospects for Using Directional Reconstruction in Point-Source Searches.

4. Colloquium, College of Wooster Physics Department, Wooster OH. 2016/10/04
   Ultra-High Energy Neutrino Astrophysics with Radio Detectors.

3. Computing in High Energy Astropart. Phys. Research 2016, Columbus OH. 2016/05/26
   Machine Learning Prospects in Trigger Thresholds for High Energy Radio Neutrino Astronomy.

2. OSU Physics Summer Seminar Series, Columbus OH. 2016/04/23
   Trigger Thresholds in High Energy Neutrino Astronomy.

1. Ohio Section of the APS Spring 2016 Meeting, Dayton OH. 2016/04/09
   Ultra-High Energy Neutrino Astrophysics with the Askaryan Radio Array (ARA).

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.

OUTREACH AND SERVICE

Coordinator for ASPIRE Workshop for High School Women, OSU	July 2015-present
Physics Climate and Diversity Committee, OSU	January 2017-May 2018
Volunteer Judge, Ohio State Science Day	2015-present
Talk, Columbus Science Pub	May 2018
Talk, The Wellington School, Columbus, OH	April 2018
Officer, Physics Graduate Student Council, OSU	October 2014-May 2017

MENTORSHIP

Graduate Students:	Lauren Ennesser, Keith McBride, Andrés Medina, 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

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