Keilah Davis, Ph.D.

Postdoctoral Researcher, TRIUMF • keilahdavis@fastmail.com

Education

Louisiana State University May 2026
Ph.D. Physics
NSF Graduate Research Fellow

North Carolina State University May 2019
B.S. Physics
Minors: Africana Studies, Mathematics
Magna Cum Laude

North Carolina School of Science and Mathematics May 2015
High School

Research Experience

Postdoctoral Research Fellow Feb 2026 – *present*
TRIUMF, Vancouver, BC, Canada
Advisor: Dr. Rituparna Kanungo
- Supporting experiments at IRIS Reaction Spectroscopy Facility
- Developing and implementing IRIS digital data acquisition system
- Supervising undergraduate and graduate student research projects

Graduate Research Assistant Aug 2019 – Dec 2025
Louisiana State University, USA
Advisors: Professor Catherine Deibel, Professor Jeff Blackmon
- Re-designed, assembled, and tested ANASEN, a silicon detector array and gas target for radioactive beam experiments.
- Implemented digital electronics and developed software for data analysis pipeline.
- Commissioned new ANASEN design at TRIUMF-ISAC facility with ^{18}F(α,p)^{21}Ne direct measurement.

Undergraduate Researcher Sept 2017 – May 2019
North Carolina State University, USA
Advisor: Professor Richard Longland
- Developed statistical methods to determine reaction cross sections given the error in optical parameters of DWBA models.
- Implemented digital electronics into a custom graphical user interface for an existing data acquisition system.

TUNL Research Experience for Undergraduates June 2017 – Sept 2017
Duke University, USA
Advisor: Professor Richard Longland
- Characterized the focal plane detector for the TUNL Enge Split-Pole Spectrograph.

- Measured the ^{22}Ne(p,γ)^{23}Na reaction using the proton transfer reaction ^{22}Ne(^{3}He,d)^{23}Na.
- Analyzed data and calculated theoretical angular cross sections using FRESCO.

Yale Summer Undergraduate Research Fellowship June 2016 – July 2016
Yale University, USA
Advisor: Professor C. Meg Urry
- Analyzed multi-wavelength data from numerous catalogs to create spectral energy distributions of X-ray luminous sources.
- Wrote technical report and delivered oral presentation on results.

PROFESSIONAL DEVELOPMENT

Nuclei in the Cosmos XVII School Sept 2023
Institute for Basic Science, Daejeon, South Korea
- Learned basics of detector simulation tools (GEANT4, NPTool) and nuclear reaction network codes (PRISM).
- Completed week-long group project and presented results to peers.

JINA-CEE Stellar Modeling for Nuclear Astrophysics Summer School June 2022
Louisiana State University, Baton Rouge, Louisiana, USA
- Learned basics of open-source stellar modeling code MESA.
- Demonstrated new skills through mini projects.

TECHNICAL EXPERIENCE

Programming: C/C++, ROOT, Python, R, Git, CMake
Software: LaTEX, Autodesk Fusion 360 (CAD), MESA, FRESCO, LabVIEW
Other skills: printed circuit board design, charged particle detection, digital electronics, analog electronics

PUBLICATIONS

1. K. Davis, J.C. Blackmon, C.M. Deibel, G.L. Wilson, S. Balakrishnan, V. Sitaraman, G.W. McCann, I. Wiedenhöver, L. Baby, I. Tolstukhin, A. Lennarz, M. Alcorta, S. Chakraborty, A. Laird, J. Glorius, D. Bardayan, S. Carmichael, S. Pain, R. Russell, L. Wagner, C. Esparza. "Direct Measurement of ^{18}F(α,p)^{21}Ne Cross Section," *in prep*.

PRESENTATIONS

1. K. Davis, J.C. Blackmon, C.M. Deibel, G.L. Wilson, S. Balakrishnan, V. Sitaraman, G.W. McCann, I. Wiedenhöver, L. Baby, I. Tolstukhin, A. Lennarz, M. Alcorta, S. Chakraborty, A. Laird, J. Glorius, D. Bardayan, S. Carmichael, S. Pain, R. Russell, L. Wagner, C. Esparza. "Measuring the ^{18}F(α,p)^{21}Ne

Excitation Function with a New ANASEN Design," Fall 2025 Meeting of the American Physical Society Division of Nuclear Physics, Chicago, USA. Oct 2025. Presentation.

2. K. Davis, J.C. Blackmon, C.M. Deibel, G.L. Wilson, S. Balakrishnan, V. Sitaraman, G.W. McCann, I. Wiedenhöver, L. Baby, I. Tolstukhin, A. Lennarz, M. Alcorta, S. Chakraborty, A. Laird, J. Glorius, D. Bardayan, S. Carmichael, S. Pain, R. Russell, L. Wagner, C. Esparza. "Improved Measurements of (α,p) Reactions with a New ANASEN Design," Fall 2024 Meeting of the American Physical Society Division of Nuclear Physics, Boston, USA. Oct 2024. Presentation.

3. K. Davis, J.C. Blackmon, C.M. Deibel, G.L. Wilson, S. Balakrishnan, V. Sitaraman, G.W. McCann, I. Wiedenhöver, L. Baby, I. Tolstukhin, A. Lennarz, M. Alcorta, S. Chakraborty, A. Laird, J. Glorius, D. Bardayan, S. Carmichael, S. Pain, R. Russell, L. Wagner, C. Esparza. "Improved Measurements of (α,p) Reactions with Digital ANASEN," 17th International Symposium on Nuclei in the Cosmos (NIC XVII), South Korea. Sept 2023. Presentation.

4. K. Davis, J.C. Blackmon, C.M. Deibel, G.L. Wilson, S. Balakrishnan, V. Sitaraman, G.W. McCann, I. Wiedenhöver, L. Baby. "Upgrading ANASEN for ^{18}Ne(α,p)^{21}Na Direct Measurement," Graduate Research Conference, Louisiana State University, USA. Apr 2023. Presentation.

5. K. Davis, J.C. Blackmon, C.M. Deibel, G.L. Wilson, S. Balakrishnan, V. Sitaraman, G.W. McCann, I. Wiedenhöver, L. Baby. "Upgrading ANASEN for ^{18}Ne(α,p)^{21}Na Direct Measurement," Fall 2022 Meeting of the American Physical Society Division of Nuclear Physics, New Orleans, USA. Oct 2022. Presentation.

6. K. Davis, R. Longland. "Developing A Custom Data Acquisition System for the Enge Split-Pole Spectrograph," McCormick Symposium, NC State University, USA. Apr 2019. Poster.

7. K. Davis, R. Longland. "A Statistical Method for Determining Stellar Reaction Cross Sections," National Society of Black Physicists, Columbus, Ohio, USA. Nov 2018. Presentation.

8. K. Davis, R. Longland. "A Statistical Method for Determining Stellar Reaction Cross Sections," Conference Experience for Undergraduates, 5th Joint Meeting of the American Physical Society Division of Nuclear Physics and the Physical Society of Japan, Hawaii. Oct 2018. Poster.

9. K. Davis, R. Longland. "A Statistical Method for Determining Stellar Reaction Cross Sections," McCormick Symposium, NC State University, USA. Apr 2018. Poster. Awarded first place.

10. K. Davis, R. Longland. "Using Proton Transfer Reactions to Constrain Stellar Cross Sections," TUNL REU Research Symposium, Duke University, USA. July 2017. Presentation.

11. K. Davis, C.M. Urry. "Spectral Energy Distributions of Stripe82X Point Sources," Leadership Alliance National Symposium, Connecticut, USA. July 2016. Presentation.

Honors & Awards

U.S. National Science Foundation Graduate Research Fellowship Program 2021–*present*
Dr. Carmen M. Fraticelli Beginning in STEM Student Award, LSU Foundation 2023

Office of Multicultural Affairs Graduate Student Excellence Award, Louisiana State University 2022
LS-LAMP Bridge to the Doctorate Fellowship, Louisiana State University 2019–2020
Park Scholarship, NC State University 2015–2019
Yusor Abu-Salha Senior Award for Outstanding Community Engagement, NC State College of Sciences 2019
Patty Award for Leadership, NC State University Physics Department 2019
First Place Poster Award, NC State University McCormick Symposium 2018
Provost's Professional Experience Program, NC State University (research grant) 2017–2018

Teaching Experience

SOARS Scholars Seminar, Invited Speaker Feb 2023
Louisiana State University, USA
- Developed a 1-hour seminar titled "How to Craft a Research Proposal."
- Implemented for first-generation, undergraduate STEM majors.

Kyran Anderson Academy, Instructor July 2019
The Science House, North Carolina State University, USA
- Developed and implemented a 1-week lesson plan on circuits for 3rd grade students.
- Evaluated learning outcomes through hands-on student projects.

Outreach

Letters to a Pre-Scientist pen pal program 2024–*present*
Astronomy on Tap–Baton Rouge organizing committee 2019–2024
Conference Experience for Undergraduates mentor, APS Division of Nuclear Physics 2022
Genesis Mentoring mentor, Louisiana State University 2021–2022
Girls Day at the Museum volunteer, Louisiana State University 2019
The Science House summer camp instructor, NC State University July 2019
Park Scholarships Mentoring Program mentor, NC State University 2017–2019
NC State College of Sciences Ambassador 2016–2019
LEAP! (Launching Your Excellent Adventures in Physics) volunteer, NC State University June 2018

Leadership Experience

Black Graduate & Professional Student Association president, Louisiana State University 2021–2022
Physics & Astronomy Graduate Student Organization executive board, Louisiana State University 2020–2022
National Society of Black Physicists chapter founding vice president, NC State University 2019
Nubian Message editor-in-chief, NC State University 2018–2019

Professional Associations

American Physical Society

National Society of Black Physicists
Sigma Pi Sigma Honor Society