Jordan L. **Eagle, Ph.D.**

NASA Postdoctoral Program (NPP) Fellow at NASA Goddard Spaceflight Center

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Introduction

Highly skilled high-energy astrophysicist with a specialized expertise in X- and γ-ray data reduction, analysis, and interpretation, primarily using the XMM–*Newton* and *Chandra* X-ray space observatories as well as the *Fermi*–Large Area γ-ray Space Telescope. Past and current research interests focus on where the most energetic massive particles, cosmic rays (CRs), are produced from in the Milky Way Galaxy using broadband studies of the descendants of supernova explosions, pulsar wind nebulae (PWNe) and supernova remnants (SNRs), to understand the capability of these sources to generate CRs. Also prioritize meaningful outreach and community engagement. Successfully defended Ph.D. dissertation (Class of 2022) at Clemson University and the Harvard & Smithsonian Center for Astrophysics as a predoctoral fellow.

Appointments

Post-doctoral

NASA Goddard Space Flight Center — *Greenbelt, MD*

Postdoctoral Fellow — *Fall 2022 – Present*

- Proposal: *Pulsar Wind Nebulae Studies in the Gamma-Ray Era*

Graduate

Harvard & Smithsonian Center for Astrophysics — *Cambridge, MA*

Chandra X-ray Center Predoctoral Fellow — *Spring 2020 – Summer 2022*

Physics & Astronomy Department, Clemson University — *Clemson, SC*

Graduate Research Assistant — *Spring 2019–Spring 2020*

Physics & Astronomy Department, Clemson University — *Clemson, SC*

Graduate Teaching Assistant — *Fall 2016–Fall 2018*

Undergraduate

College of William & Mary — *Williamsburg, VA*

Student Intern — *Summer 2015*

Physics Department, Radford University — *Radford, VA*

Research Assistant — *Spring 2015*

Physics Department, Radford University — *Radford, VA*

Lab Assistant — *Fall 2014–Fall 2016*

RU Summer Bridge, Radford University — *Radford, VA*

Teaching Assistant — *Summer 2014*

Education

Ph.D. in Physics — *Clemson University, Clemson, SC*

Received Summer 2022 — *Summer 2022*

- Thesis: *The Pursuit for γ-ray Emitting Pulsar Wind Nebulae with the Fermi-LAT*
- Advisors: D. Castro, M. Ajello
- Dissertation Defense & Approval: July 2022

M.S. in Physics — *Clemson University, Clemson, SC*

Received Fall 2019 — *Fall 2019*

- Thesis: *Investigation of a Candidate for Cosmic Ray Acceleration*
- Advisor: M. Ajello

B. S. in Physics — *Radford University, Radford, VA*

Received Spring 2016
Minors in Spanish and Astronomy

Mentorship & Advising

Post-doctoral

Fermi–LAT Collaboration — *Greenbelt, MD*

Galactic Diffuse Group Coordinator — *Spring 2024–Present*

- Oversee the progress and success of related projects and publications on behalf of the international collaboration to fulfill space mission objectives.

George Washington University — *Washington D.C.*

Co-Advisor — *Fall 2022–present*

- Co-advising a graduate student at George Washington University alongside Professor Oleg Kargaltsev. The graduate student leads a phase-resolved analysis of the Vela pulsar using the Fermi–LAT. Submitted to the Astrophysical Journal.

Howard University *Washington D.C.*

Co-Advisor *Spring 2024–present*

- Working alongside Professor Joel Coley of Howard University advising a graduate student to perform Fermi–LAT analysis on a high-mass gamma-ray binary system. Expected to be an upcoming peer-reviewed article.

NASA CRESST II *Greenbelt, MD*

Intern Advisor *Summer 2024*

- Hired and trained a recent baccalaureate graduate in data processing and interpretation of Chandra X-ray data. Student contribution includes co-authoring an upcoming journal publication.

NASA OSTEM *Greenbelt, MD*

Intern Advisor *Summer 2023*

- Hired and trained a senior undergraduate student intern in Fermi–LAT data analysis leading to the student's co-authorship on an upcoming journal publication.

Minds Matter Boston Chapter *Boston, MA*

Co-mentor *2020–2023*

- Provided individualized college preparation and professional career development for a high school student.

Graduate

Clemson University *Clemson, SC*

Co-Advisor *2018–2020*

- Co-advised an undergraduate physics student on XMM–Newton X-ray data analysis. Student contribution included co-authoring a journal publication.

Teaching Experience

Graduate

Physics & Astronomy Department, Clemson University *Clemson, SC*

Graduate Teaching Assistant *Fall 2016 – Fall 2018*

- Lead instructor of 12 11-week courses for Solar System and Galactic Astronomy curricula.
- Promoted computational literacy and analytical thinking through hands-on instruction and engagement.

Undergaduate

Physics Department, Radford University *Radford, VA*

Undergraduate Teaching Assistant *Fall 2014–Spring 2016*

- Electronics Lab, Spring 2016. Assisted lead instructor.
- Introductory Physics, Fall 2014—Fall 2015. Assisted lead instructor.
- Radford Summer Bridge. Summer 2014. Assisted lead instructor.

Selected Honors and Awards

Graduate

Outstanding Graduate Student in Engagement Award *Clemson, SC*

Clemson University, College of Science *Spring 2022*

- Recognized by the University's College of Science for commitment to community and outreach engagement.

Graduate Research Assistant Award *Clemson, SC*

Clemson University, Physics & Astronomy Department *Spring 2022*

- Recognized by the University's Physics and Astronomy Department as a successful graduate student researcher.

Grants and Awards as P.I.

Post-doctoral

Chandra X-ray Observatory Research Program, Cycle 25 *Greenbelt, MD*

$78,000.00 USD *Fall 2023*

- Research Program, Cycle 25. Proposal number 25500243. Joint observing time with the XMM–Newton X-ray Space Telescope.

NuSTAR Guest Observer Program, Cycle 9 *Greenbelt, MD*

$59,963.00 USD *Fall 2023*

- General Observer Program, Cycle 9. NASA Research Announcement NNH22ZDA001N. Proposal number 9035.

Fermi–LAT Guest Investigator Program, Cycle 15 *Greenbelt, MD*

$77,000.00 USD *Fall 2022*

- General Investigator Program, Cycle 15. NASA Research Announcement NNH21ZDA001N. Proposal number 151034.

Graduate

NuSTAR General Observer Program Cycle 6 *Clemson, SC*

$62,000.00 USD *Spring 2020*

- General Observer Program, Cycle 6. NASA Research Announcement NNH19ZDA001N. Proposal number 6053.

Fermi–LAT Guest Investigator Program, Cycle 11 *Clemson, SC*

$60,000.00 USD *Spring 2018*

- Fermi Guest Investigator Program, Cycle 11. NASA contract 80NSSC18K1716. Proposal number 111197.

Publications & Presentations

First Author Journal Publications (5)

1. *Parkes Radio and NuSTAR X-ray Observations of the Composite SNR B0453–685 in the LMC.* **Eagle, J.**, et al., 2024. ApJ, 975, 247.

2. *Fermi–LAT γ-ray Emission Discovered from Composite SNR B0453–685 in the Large Magellanic Cloud.* **Eagle, J.**, et. al., 2023. ApJ, 945, 13.

3. *MeV–GeV γ-ray Emission from SNR G327.1–1.1 Discovered by the Fermi–LAT.* **Eagle, J.**, et. al, 2022. ApJ, 940, 10.

4. *Gamma-ray Emission Revealed at the Western edge of SNR G344.7—0.1.* **Eagle, J.**, Marchesi S., Castro D., Ajello M., Vendraso A., 2020. ApJ, 904, 2.

5. *Discovery of a Possible Shock-Cloud Interaction on the Western Edge of the Vela SNR.* **Eagle, J.**, Marchesi S., Castro D., Ajello M., Duvidovich L., Tibaldo L., 2019. ApJ, 870, 1.

Co-Authored Journal Publications (7)

1. *Multiwavelength Investigation of MGRO J1908+06 Using Fermi–LAT, VERITAS, and HAWC.* Shang, R. Y., **Eagle, J.**, Kumar, S., Coutiño, S., 2024. ApJ, 974, 61.

2. *Chandra X-Ray Observations of PSR J1849-0001, the PWN, and the TeV Source HESS J1849-000.* Gagnon, S., ... **Eagle, J.**, 2024. ApJ, 968, 67.

3. *2FHL J1745.1–3035: A Newly Discovered, Powerful Pulsar Wind Nebula Candidate.* Marchesi. S., **Eagle, J.**, Ajello, M., Castro, D., 2024. ApJ, 964, 2.

4. *Fermi–LAT Detection of the Supernova Remnant G312.4–0.4 in the Vicinity of 4FGL J1409.1–6121e.* Chambery, P., Lemoine-Goumard, M., ... **Eagle, J.**, 2023. ApJ, 959, 2.

5. *The High Energy X-ray Probe (HEX-P): supernova remnants, pulsar wind nebulae, ...* Reynolds, S., Hongjun, A., ... **Eagle, J.**, ..., 2023. FrASS, 10, 1321278.

6. *The high energy X-ray probe (HEX-P): Galactic PeVatrons, star clusters, superbubbles, ...* Mori, K., Reynolds, S., ... **Eagle, J.**, ..., 2023. FrASS, 10, 1303197.

7. *Discovery of GeV γ-Ray Emission from Pulsar Wind Nebula Kes 75 and PSR J1846-0258.* Straal, S., Gelfand, J., **Eagle, J.**, 2023. ApJ, 942, 103.

Close to Publication (6)

1. *A Systematic Search for MeV–GeV Pulsar Wind Nebulae without Gamma-ray Detected Pulsars.* **Eagle, J.**, et al., 2025. ApJ, submitted.

2. *The Vela Pulsar and Pulsar Wind Nebula using 13 years of Fermi–LAT Observations.* Lange, A., **Eagle, J.**, et al., 2025. ApJ, submitted.

3. *Probing Particle Acceleration Mechanisms in the High-mass Gamma-ray binary 1FGL J1018.6-5856 Using Multi-Wavelength Observations.* Coley, J., Pope, M., **Eagle, J.**, et al., 2025. ApJ, in preparation.

4. *Deep Chandra and XMM-Newton Observations of the TeV PWN HESS J1303–631.* **Eagle, J.**, et al., 2025. ApJ, in preparation.

5. *Multiwavelength Investigation of HESS J1857+026 Emission Using the Fermi–LAT, VERITAS, and HAWC Observatories.* **Eagle, J.**, Shang, R. Y., Kumar, S., Coutiño, S., et al., 2025. ApJ, in preparation.

6. *Optical Spectroscopy and Imaging using the Gemini–South Observatory to Investigate the Likely Shock-Cloud Site 2FHL J0826.1–4500 for Cosmic Ray Acceleration.* **Eagle, J.**, et al., 2025. ApJ, in preparation.

Presentations (11 invited, 1 contributing, 3 posters)

1. *The High-Energy Nature of Galactic Sources and Cosmic Rays.* Spring 2025. Drexel University, Philadelphia, PA.

2. *The High-Energy Nature of Galactic Sources and Cosmic Rays.* Spring 2025. Radford University, Radford, VA.

3. *High-Energy Studies of Galactic Cosmic Ray Accelerators.* Fall 2024. American Physical Society Mid-Atlantic Section Annual Meeting, Philadelphia, PA.

4. *The Origin of Cosmic Rays in the Fermi-LAT Gamma-ray Era.* Spring 2024. Roper Mountain Astronomers Club, Greenville, SC.

5. *Pulsar Wind Nebula Studies in the Gamma-ray Era with the Fermi-LAT.* Fall 2023. Radford University, Radford, VA.

6. *Pulsar Wind Nebula Studies in the Gamma-ray Era with the Fermi-LAT.* Fall 2023. Michigan Tech University Physics Colloquium, Houghton, MI.

7. *Pulsar Wind Nebula Studies in the Gamma-ray Era with the Fermi-LAT.* Fall 2023. Center for Cosmology and AstroParticle Physics Seminar at the Ohio State University, Columbus, Ohio.

8. *Pulsar Wind Nebula Studies in the Gamma-ray Era with the Fermi-LAT.* Fall 2023. Physics of Neutron Stars Workshop at University of Maryland, College Park, Maryland.

9. *Fermi–LAT Gamma-ray Emission Discovered from the Composite SNR B0453–685 in the LMC.* June 2023. Multifrequency Behaviour of High Energy Cosmic Sources - XIV Frascati Workshop Series, Palermo, Italy.

10. *Pulsar Wind Nebula Studies in the Gamma-ray Era with the Fermi-LAT.* Eagle, J., et. al., Spring 2023. AAS High Energy Astrophysics Division (HEAD) Meeting #20. Special Sessions: Recent Advances in PWNe, Waikoloa Village, HI.

11. *Pulsar Wind Nebula Studies in the Gamma-ray Era with the Fermi-LAT.* Fall 2022. George Washington University Astronomy Seminar, Washington, DC.

12. *Pursuing Gamma-ray Emitting Pulsar Wind Nebulae with the Fermi-LAT.* Eagle, J., et. al., Fall 2022. Tenth International Fermi Symposium, Johannesburg, South Africa.

13. *Hunting Pulsar Wind Nebulae with the Fermi–LAT.* Eagle, J., Castro D., Spring 2022. AAS High Energy Astrophysics Division (HEAD) Meeting #19, Pittsburgh, PA.

14. *Hunting Pulsar Wind Nebulae with the Fermi–LAT.* Eagle, J., Castro D., Spring 2021. AAS 237th Meeting, iPoster Sessions.

15. *2FHL J0826.1-4500: Discovery of a New Galactic Accelerator.* Eagle, J., et al., Fall 2018. 8th International Fermi Symposium, Baltimore, MD.

Undergraduate (2 posters, 1 magazine article)

1. *Comparing Geophysical Methods for Determining the Thickness of Arctic Sea Ice.* Robertson, R., Bowman, T., Eagle, J., et al., 2016. American Geophysical Union Fall 2016 meeting.

2. *Taking on the 2014 American Geophysical Union (AGU) Fall Meeting in San Francisco, CA. Dec 15-19, 2014.* Eagle J., 2015. pg. 25. SPS Spring 2015 issue.

3. *A Possible Correlation between Surface Temperature and Thickness of Arctic Sea Ice.* Herman, R., Roadcap, C., Eagle, J., et al., 2014. American Geophysical Union Fall 2014 meeting.

Professional Training & Skills

Professional Training

Astrostatistics Workshop — *PennState*
Student Participant — *Summer 2021*

Fermi Summer School — *Lewes, DE*
Student Participant — *Summer 2019*

Data Analysis Experience

Technical Computer Software (Level)
- Anaconda (Advanced)
- Jupyter Notebook (Advanced)
- FermiPy Python Package (Advanced)
- NAIMA Python Package (Advanced)
- FermiTools (Advanced)
- HEASOFT tools including Xspec, fv, nh (Advanced)
- *Chandra* Interactive Analysis of Observations or CIAO (Advanced)
- XMM–*Newton* Science Analysis System or SAS (Advanced)
- Sherpa (Moderate)
- Pyraf/IRAF (Basic)
- GitHub (Moderate)
- Docker (Basic)
- Podman (Basic)

Programming Languages (Level)
- Bash (Advanced)
- Python (Advanced)
- LaTeX (Advanced)
- R (Basic)
- C++ (Basic)
- Fortran (Basic)

Telescopes
- Fermi–LAT (MeV–GeV γ-ray)
- Nuclear Spectroscopic Telescope Array or NuSTAR (hard X-ray)
- XMM–*Newton* and *Chandra* (soft X-ray)
- Gemini (optical imaging and spectroscopy)

Professional Affiliations & Service

Professional Affiliations

Fermi–LAT Collaboration
Postdoctoral Member — *2020–Present*
Galactic Diffuse Group Coordinator — *Spring 2024–Present*

Smithsonian Astrophysical Observatory — *Cambridge, MA*
Research Collaborator — *Summer 2022 – Present*

Professional Service

Fermi Communications Team — *Greenbelt, MD*
Support Scientist — *2022–Present*

Fermi Summer School — *Lewes, DE*
Data Analysis Instructor — *Summer 2023, 2024*

Astrophysical Journal
Peer Reviewer — *2019–Present*

Graduate

Clemson University, Physics & Astronomy Graduate Student Organization — *Clemson, SC*
Public Outreach Secretary — *Spring 2019 – Spring 2020*

Clemson University, Symposium in Research for Physics and Astronomy (SIRPA) — *Clemson, SC*
Event Organizer — *August 2019*

Clemson University, Meeting for Astronomers in South Carolina (MASC) — *Clemson, SC*
Event Organizer — *June 2018*

Highlighted Outreach & Community Engagement Efforts

On Planet Nine YouTube Channel — *YouTube Channel*
Volunteer Outreach Scientist — *2020–2024*

North Star Tutoring — *Greenbelt, MD*
Volunteer — *Fall 2023–Spring 2024*

Minds Matter Boston Chapter — *Boston, MA*
Volunteer — *2020–2023*

Clemson University Planetarium — *Clemson, SC*
Volunteer Operator — *Fall 2016 – Spring 2020*

Radford University Planetarium — *Radford, VA*
Planetarium Operator — *Fall 2014 – Spring 2016*

Radford University Science Days — *Radford, VA*
Volunteer — *Fall 2013 – Spring 2016*