Emma Schwartzman

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Education

- **Bachelor's of Science in Astronomy**
  University of Maryland, College Park, MD — *Aug 2015 - May 2019*
  Graduated with High Honors
- **Bachelor's of Science in Physics**
  University of Maryland, College Park, MD — *Aug 2015 - May 2019*
- **Master's of Science in Applied Physics**
  George Mason University, Fairfax, VA — *Aug 2020 - May 2023*
  Astrophysics Concentration
- **Ph.D. in Applied Physics**
  George Mason University, Fairfax, VA — *Aug 2020 - May 2025 (expected)*
  Advisor: Dr. Tracy Clarke, Naval Research Laboratory

Positions Held

- **Graduate Research Assistant**: George Mason University, Fairfax, VA; **August 2022 - Present**
- **Graduate Teaching Assistant**: George Mason University, Fairfax, VA; **August 2020 - August 2022**
- **Undergraduate Researcher**: Laboratory for Millimeter-wave Astronomy, College Park, MD; **August 2018 - May 2019**
- **Undergraduate Researcher**: NASA Goddard Space Flight Center, Greenbelt, MD; **April 2016 - May 2017**
- **Undergraduate Teaching Assistant**: University of Maryland, College Park MD; **August 2016 - May 2019**

Publications

- **Schwartzman, E.**, et al., *VaDAR: Varstrometry for Dual AGN using Radio interferometry*, in press.
- Reefe, M., Satyapal, S., Sexton, R. O., Secrest, N. J., Matzko, W., **Schwartzman, E.**, et al., *Nuclear Activity in the Low-metallicity Dwarf Galaxy SDSS J0944-0038 : A Glimpse into the Primordial Universe*, 2023, ApJL, 946, 2.

Research Experience

- **George Mason University** — Fairfax, VA
  Graduate Research Assistant — *August 2022 - Present*
  - **VaDAR: Varstrometry for Dual AGN using Radio interferometry**: Research utilizing a novel method that combines high-precision astrometric measurements with high-resolution radio interferometry in the search for dual AGN. Successfully proposed for VLA and VLBA observatory time, with a submitted follow-up HST proposal. Work done at George Mason University with mentor **Shobita Satyapal** and U.S. Naval Research Laboratory with thesis mentor **Tracy Clarke**, and will contribute to doctoral dissertation.
  - **Characterizing Continuum Emission from Low-Metallicity Dwarf Galaxies with Candidate IMBHs**: ALMA imaging study of the continuum emission of a unnique pilot sample of low-mass, low-metallicity dwarf galaxies that may play host to accreting IMBHs, which would elude detection via tradiational accretion diagnostics. Targets exhibit confirmed coronal line detections with no other evidence for accretion. Project will contribute to future, larger studies, in addition to follow-up JWST proposals. Work done at George Mason University with mentor **Shobita Satyapal** and U.S. Naval Research Laboratory with mentor **Kristina Nyland**.
- **U.S. Naval Research Laboratory** — Washington, DC
  Student Research Scientist — *May 2019 - Present*
  - **Disentangling the Complex Emission in the Dissociative Cluster Merger CIZA J0107.7+5408**: Research investigating the radio morphology and properties of the dissociative cluster merger CIZA J0107.7+5408. Experience using ground-based radio interferometry and space-based high resolution X-ray observatories. Experience includes working with analytical software packages that are both standard and in development (including several radio data calibration software packages, an x-ray data calibration package, and several image editing platforms), as well as analysis of their data products. Work also includes the use of these software packages for self-calibration for time-dependent gains, imaging, and image analysis, as well as for evaluating different data packages for speed and accuracy (e.g. the speed of the same task with one package versus another). Advanced data analysis of sources of interest includes combining multiple observing frequencies to characterize source location, size, spectral characteristics, etc. Other responsibilities include delivering a full description of procedure, analysis, and results. Software used includes Common Astronomy Software Application (CASA), Chandra Interactive Analysis of Observations (CIAO), and SAO's DS9. Work done at the U.S. Naval Research Laboratory with dissertation mentor **Tracy Clarke**, and will contribute to doctoral dissertation.

- **Laboratory for Millimeter-wave Astronomy** College Park, MD
  Undergraduate Researcher *August 2018 - May 2019*
  - **Exploring Star Formation in Five Isolated Cores**: Research investigating five dark cores with star forming capabilities as observed by 2MASS C2D survey that have matching ALMA data and various infrared observations. Five cores will be analyzed for young stellar object populations in the IR bands. Work done at University of Maryland, Laboratory for Millimeter-wave Astronomy with senior honors thesis mentor **Lee Mundy.** Present as **Senior Honors Thesis** in May 2019, accepted with High Honors.
- **NASA Goddard Space Flight Center** Greenbelt, MD
  Undergraduate Researcher *August 2016 - May 2017*
  - **The Environment of Short Duration Gamma-Ray Bursts**: Research using photometry to characterize the host galaxies of short gamma-ray bursts. Processed images from Discovery Channel Telescope and used in conjunction with Swift BAT data to locate possible short GRBs. Characterized nearby galaxies to locate likely progenitor system of the burst. Patterns applicable to possible gravitational wave progenitor systems. Work done at NASA Goddard Space Flight Center with mentor **Eleonora Troja.** Research presented as **Scholar's Capstone Thesis** in May 2017.

Fellowships and Grants

- **NRAO Student Observing Support Fellowship**: $27,100, August 2023 - May 2024
- **VLASS Conference Travel Grant**: $750, September 2022
- **NRAO Student Observing Support Fellowship**: $35,000, August 2022 - August 2023

Workshops and Conferences

- **The restless nature of AGN**: VaDAR: Varstrometry for Dual AGN using Radio interferometry, Poster, Naples, IT, June 2023
- **NRAO Synthesis Imaging Workshop**: Workshop, Online, June 2023
- **American Astronomical Society Annual Winter Meeting**: VaDAR: Varstrometry for Dual AGN using Radio interferometry, Contributed talk, Seattle, WA, January 2023
- **NASA Goddard Space Flight Center**: VaDAR: Varstrometry for Dual AGN using Radio interferometry, Invited seminar, Greenbelt, MD, November 2022
- **MARLAM Conference**: VaDAR: Varstrometry for Dual AGN using Radio interferometry, Contributed talk, Online, October 2022
- **VLASS Conference**: VaDAR: Varstrometry for Dual AGN using Radio interferometry, Contributed talk, Socorro, NM, September 2022
- **NRAO Synthesis Imaging Workshop**: Workshop, Online, June 2022
- **American Astronomical Society Annual Winter Meeting**: Multi-frequency Radio Study of the Dissociative Merger Cluster CIZA J0107.7+5408, Contributed talk, Online, January 2021
- **NRAO Synthesis Imaging Workshop**: Workshop, Online, June 2021
- **Bonn-Cologne Graduate School**: Exploring Star Formation in Five Isolated Cores, Invited seminar, Bonn, DE, March 2019
- **American Astronomical Society Annual Winter Meeting**: Exploring Star Formation in Five Isolated Cores, Contributed talk, Seattle, WA, January 2019

Awarded Observing Time

- **VLA, 22A**: **Schwartzman, E.**, et al., *The VLA View of Astrometrically-Variable Quasars*, 9 hours awarded
- **VLBA, 23A**: **Schwartzman, E.**, et al., *Characterization of Astrometrically-Variable Quasars with the VLBA*, 56 hours awarded
- **XMM-Newton, AO-22**: Cann, J., et al., *Dwarf GIMLI-X: Exploring X-ray activity in low metallicity dwarf mergers*, 243k seconds awarded
- **VLA, 20B**: Giacintucci, S., et al., *Low Frequency Study of the Dissociative Merger Cluster CIZA J0107.7+5408*, 5 hours awarded

Scientific and Technical Expertise

- **JVLA Observing Experience**: Created scheduling blocks for successful proposal (S- and X-bands).
- **VLBA Observing Experience**: Created scheduling blocks for successful proposal (S- and X-bands).
- **Astronomical Languages/Software**: CASA, AIPS, DS9, PyBDSF, WSClean, IDL, Topcat, Obit, CIAO
- **Programming Languages/Software**: Python, Unix/Bash, LaTeX, Git, MATLAB

Outreach Experience

- **Spectrum** August 2021 - Present
  George Mason University
  - **Vice President**: Leadership position in a diversity, equity, inclusion, and acceptance (DEIA) group at George Mason University known as Spectrum. Leadership position requires brainstorming club workshop plans and funding ideas, assisting in the submission of funding proposals, and mentoring undergraduate students in traditionally underrepresented groups.
  - **Peer Mentor**: Program designed to support traditionally underrepresented students in the astronomy and physics department by assigning them peer mentors.
- **Department of Physics and Astronomy** August 2017 - May 2019
  University of Maryland
  - **Peer Mentor**: Program designed to support traditionally underrepresented students in astronomy and physics. Assisted freshman students with the transition process, as well as supporting them in their first year of undergraduate work.
- **Lecture Demonstration Facility** August 2017 - May 2019
  University of Maryland
  - **Demonstration Employee**: Working for the university's demonstration and outreach department. Responsibilities include design, building, and set-up of various demonstrations for the physics department. Outreach responsibilities include designing outreach presentations, training volunteers, and helping lead programs.
- **Department of Physics and Astronomy** August 2016 - May 2019
  University of Maryland
  - **Head Tutor**: Tutor for ASTR120/121, the major requirement introductory astrophysics courses. Became head tutor in spring 2018; responsibilities include scheduling, organizing other tutors, and maintaining quality of tutoring.
- **Scholar's Program** August 2016 - May 2017
  University of Maryland
  - **Peer Mentor**: Assisted incoming college freshman with the transition between high school and college; organized events spanning the year intended to support the Scholars community.

Awards and Honors

- **Excellence in Teaching Award**: George Mason University, Spring 2022
- **Excellence in Teaching Award**: George Mason University, Fall 2021

Professional Experience

- **Summer Graduate Student Mentor**: George Mason University, Summer 2023 - Mentored an incoming graduate student in astrophysics working on calibration of new VLBA observations over the summer.
- **Tenure-track Faculty Selection**: George Mason University, Spring 2022 - Participated as a graduate student representative in the search for a new tenure-track faculty member, with a focus in astrophysics.