

# Sydney Mutchnick

Warminster, PA 18974

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## EDUCATION

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**University of Florida**, Gainesville, FL Aug 2023 – Present  
Ph.D. in Physics

**University of Richmond**, Richmond, VA Graduated May 2022  
Bachelor of Science in Physics, *cum laude*  
Bachelor of Science in Mathematics, *cum laude*  
University of Richmond Honors Program in Physics

**Cumulative GPA: 3.59**

### Honors & Awards:

- Dean's List: Fall of 2019, Fall of 2020 & Spring of 2021
- Hard Work & Extraordinary Achievement Award (Straight A's): Spring of 2020 & Fall of 2021
- 2021 Paper Competition Award from the UR Undergraduate Research Committee

### Academic Scholarships:

- Cole Memorial Scholarship
- Nathan Zell Scholarship

## RESEARCH EXPERIENCE

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**University of Richmond**, Richmond, VA Jan 2020 – Jul 2022

### *Research in Astrophysics, Physics Department*

- Created neural networks for determining the redshifts of galaxies from limited information utilizing PyTorch running on Google Collab
- Implemented custom statistical methods to analyze large populations of quasars (galaxies with supermassive black holes) resulting in two papers published in The Astrophysical Journal
- Organized and prepared scientific papers for publication including detailed graph figures
- Presented research with a talk at the 238<sup>th</sup> American Astronomical Society National Meeting (Jun 2021) and at the 9<sup>th</sup> Mid-Atlantic Radio Loud AGN Meeting at Johns Hopkins University (Oct 2022)
- Received the 2021 Paper Competition Award from the UR Undergraduate Research Committee
- Experience with big data analysis, statistical analysis, data validation, IDL, and TOPCAT

## ACADEMIC WORK EXPERIENCE

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**University of Richmond**, Richmond, VA Aug 2020 – May 2020

### *Physics Grader*

- Responsible for the collection, grading, organization, and return of materials to student within strict deadlines

**University of Richmond**, Richmond, VA Aug 2020 – Dec 2020

### *Math Mentor*

- Invited to join the Fundamentals of Abstract Math course as a mentor to students
- Assessed current needs of students and planned optimal educational strategies to guide, mentor, and tutor students

## PUBLICATIONS

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*The X-Ray Luminosity Function Evolution of Quasars and the Correlation between the X-Ray and Ultraviolet Luminosities* //

<https://ui.adsabs.harvard.edu/abs/2022ApJ...932..111S/abstract> (6 citations)

The Astrophysical Journal, Volume 932, Issue 2, id.111, 8 pp. (2022)

J. Singal, **S. Mutchnick**, V. Petrosian

*Can the Distance–Redshift Relation be Determined from Correlations between Luminosities?* //

<https://ui.adsabs.harvard.edu/abs/2022ApJ...935L..19P/abstract> (18 citations)

The Astrophysical Journal Letters, Volume 935, Issue 1, id.L19, 5 pp. (2022)

V. Petrosian, J. Singal, **S. Mutchnick**