

# Rebecca Wisenbaker

Undergraduate student at The University of Texas at Austin  
Double-majoring in Astronomy and Physics, Junior

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## RESEARCH INTERESTS AND OBJECTIVES

I study how transient events, specifically superluminous supernovae and tidal disruption events, behave and evolve over their short lifespan by analyzing them with Python. I am also trying to detect black holes at the center of globular clusters using spatially resolved spectroscopy and Python. I hope to continue this but also study new topics such as high-redshift galaxies and early-universe black holes to expand my range of knowledge.

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## EDUCATION

### **The University of Texas at Austin- BS Astronomy and Physics (In Progress)**

January 2024 - Present

- 3.68 cumulative GPA
- 3.64 astronomy GPA
- Double-majoring in Astronomy and Physics, Junior
- Member of Astronomy Students Association
- Employee- Research Assistant

### **Lone Star Cy-Fair- Associates of Science**

August 2019 - May 2023

- 3.67 GPA
  - Received Associates of Science with honors of Cum Laude
  - Member of Phi Theta Kappa Honor Society
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## RESEARCH EXPERIENCE

### **Time-Domain/ Transient Events Research Project**

August 2025- Present

- Paid research position; employed by the University of Texas at Austin
- Leading a project to determine at what redshift we can look to with the Roman Space Telescope once it launches to most effectively study transients
- Created plots using Python to analyze data from a catalogue of Superluminous Supernovae under Prof. Sebastian Gomez
- Collected data at McDonald Observatory on Superluminous Supernovae and Tidal Disruption Events

### **Black Hole Detection Research Project**

May 2025 - Present

- Collected data for this project at McDonald Observatory
  - Looked for black hole signatures in spiral galaxies and globular clusters through spatially resolved spectroscopy and utilization of Python under Prof. Karl Gebhardt
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## RELATED COURSEWORK

### **Physics:**

- Mechanics, Electricity & Magnetism, Waves & Optics, Classical Dynamics, Modern Physics, Thermodynamics & Statistical Mechanics, Quantum Physics 1

### **Astronomy:**

- Introductory Astronomy, Astrophysics, Planetary Systems, Introduction to Research, Galaxies and the Universe, Galaxy Evolution VIP

### **Math:**

- Integral Calculus, Multivariable Calculus, Differential Equations with Linear Algebra, Vector Calculus, Probability, Matrices and Matrix Calculations

### **Computer Science:**

- Elements of Computers and Programming, Introduction to Research Programming
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## SKILLS

- Proficient in collimating and using telescopes (StarMaster dobsonian reflectors, Celestron telescopes with and without go-to equipment, 2.1- and 2.7- meter telescopes at McDonald Observatory), and adept in utilizing night-sky atlases

- Proficient in using high-powered binoculars for deep-space observational astronomy

- Utilization of Python and ds9 for data analysis
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-Presented our findings in a research poster at AAS

### **Galaxy Evolution VIP (GEVIP) Research Project**

January 2026- Present

-Accepted into the Galaxy Evolution VIP (GEVIP) research program to do a project on a topic in galaxy evolution

### **McDonald Observatory**

29 May 2025 - 03 June 2025

-Independently set up observations and operated the 2.7 meter telescope; collected spectra of stars, galaxies, and globular clusters  
-Produced flux vs. wavelength plots and observation charts for research on black holes, exoplanets, and dwarf galaxy centers

14 December 2025- 18 December 2025

-Independently set up observations and operated the 2.1 meter telescope; used ETSI to collect data on transients

### **Introduction to Research (Course)**

October 2025- December 2025

-Created a research poster, utilized research paper databases, became proficient with DS9, wrote a project proposal, and wrote a brief paper on my findings

-For the project: Analyzed broad-line, low-redshift AGN from SDSS and compared this to high-redshift AGN in an effort to find a correlation between black hole accretion disk metallicity, redshift, and galaxy type  
-Found that results were insufficient and different analysis methods would need to be used to obtain accurate results

### **Mechanics Lab, Electricity & Magnetism Lab, Waves & Optics Lab: The University of Texas at Austin**

January 2024 - May 2025

-Python simulations, data analysis, error calculations, Capstone data acquisition  
-Experience with oscilloscopes, lasers, lenses, spectrometers, optical & magnetic equipment, PASCO sensors, interferometers, and circuits

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## **WORK EXPERIENCE**

### **Cashier, trainer: PetSmart**

February 2022 - December 2023

### **Server, catering, trainer, to-gos, food delivery driver: Lupe Tortilla**

June 2020 - December 2021

## **LANGUAGES**

- Python, intermediate

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## **AWARDS**

- Deep-space observation list awards from the Texas Star Party: 13 novice and challenge lists completed

- Tech Club regional and state competition awards during sophomore and junior year of high school: 1st, 2nd, and 3rd place awards from the Texas Technology Student Association

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## **REFERENCES**

### **Sebastian Gomez- Research**

sebastian.gomez@austin.utexas.edu

-UT Austin professor who I'm currently doing research under

### **Karl Gebhardt- Research**

gebhardt@astro.as.utexas.edu

-UT Austin professor who I'm currently doing research under

### **Rodney Rocha- Mentor**

(281) 798-2940

-Former aerospace engineer at NASA

### **Matthew Simmons- Manager**

(832) 510-4944

-Former manager at Lupe Tortilla

### **Emily Rayburn- Manager**

(614) 477-9270

-Former manager at PetSmart