

Charlie Tolley

Astrophysics

Education

2021-present **Bachelor of Arts**, *University of California, Berkeley*, Berkeley, CA, GPA - 3.3
Astrophysics

Research Interests

I have interest in instrumentation across the electromagnetic spectrum.

Teaching Experience

Python DeCal

Teaching and Developing Curriculum I am the undergraduate students who make the Python DeCal possible by teaching and providing basic coding skills; I am the current head instructor for the next two semesters. I hold office hours, teach lecture, and grade homework. My specialty in lecture is teaching command line and scripting, but I can and have taught or co-taught every other lecture as well. We come highly recommended on the Berkeley Astronomy page before students enter higher division labs. Our curriculum has continually developed in collaboration with the UCB Astronomy faculty in order to best prepare our students for their futures in research.

Research Experience

Antenna Engineering for EIGSEP

Electromagnetically Isolated Global Signal Estimation Platform I am working on a new design for a broadband dipole antenna that will be a candidate for mounting on the EIGSEP project, run by grad student Christian Bye and Prof. Aaron Parsons. I also spent four nights in the field on Deployment 2 of the working version of EIGSEP, working with the FieldFox Vector Network Analyzer to calibrate and characterize the antennae we are currently working with.

Optical Observing at CTIO on Blanco 4-Meter

Dark Energy Calibration Survey I ran observing at the Blanco telescope mounted with the Dark Energy Camera in person and remotely for the Dark Energy Calibration Survey (DECaS). I gained proficiency troubleshooting from the system GUIs and the terminal where we run our targeting script.

Optical Observing at CTIO at .9-Meter

Observing with GSU Graduate Students Alongside grad students Aman Kar and Sebastian Carrasco working under Todd Henry at Georgia State University, I helped to run and ran solo the observing for their research group.

PSF Outlier Spectra Analysis at DESI

Secondary Target Analysis I am currently working at Lawrence Berkeley Lab with the DESI cosmology group to identify and analyze astronomical objects in the secondary target set that lie off of the main sequence.

Visual Inspection Campaign with NoIRLab Collaboration

Subaru and ODIN LAE Galaxies With data from Subaru telescopes and ODIN, I worked with Arjun Dey and others to visually inspect possible Lyman Alpha Emitters. This will provide some necessary insight into the depths possible for DESI-II as we begin planning for the next stages of the program.

Python DeCal Final Project

Planetary Retrograde Simulation I played a major role in this group project in which we animated the paths of planets through the sky from the perspective of someone on Earth.

High School Research Project

Light Pollution and Christmas Lights I designed and conducted an experience to measure and analyze the effects of Christmas lights on the light pollution of Winters, CA. I wrote a literature review, method, discussion and conclusion for the project, including relevant graphs.

Research Talks

Rare Gems in Big Data Conference I presented a poster at the inaugural gathering of the Rare Gems in Big Data Conference hosted by Noirlab. I gave a 2 minute lightning poster talk on my work with the DESI collaboration on outlier spectral analysis.

Python DeCal I gave a report alongside my group mates on the process, implementation and trials while coding our simulation.

AP Capstone I gave multiple practice presentations for my high school research described in the above section, although because of the pandemic I was not required to submit a presentation video in accordance with the emergency measures taken by CollegeBoard.

Skills

Softwares Python, Java

Soft Skills Critical Thinking, Thoughtful Critique, Cooperating in a Team Environment, Teaching

Languages: English - First Language, Spanish - Second Language