

# Liam Plybon

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**EDUCATION**      **Texas A&M University**, College Station, Texas  
*Bachelor of Science, Physics*, May 2019  
*Minor, Astrophysics*  
Commitment to Service Award

**EXPERIENCE**      **Chemistry Teacher**      Longview ISD  
Longview, TX      Aug 2022 - Present  
Taught honors-level chemistry to 180 high school students. Developed an honors chemistry curriculum and five labs to challenge students. In addition to my teaching duties, I coached the Science UIL program to prepare students for work in the sciences after graduation. Ran an informal after-school tutor group for students struggling in math and science.

**SCADA Engineer**      SCADABit, LLC.  
Tyler, TX      Feb 2022 - Present  
Design and implement SCADA systems to run various industrial systems, ranging from human waste processing plants to dairy plants.

**Scientific Editor**      Freelance Editor  
Remote      Sept. 2021 - Aug 2022  
Edited and reviewed scientific papers in physics, astronomy, and engineering; primarily from non-native English speakers. All work was conducted remotely. Considered a subject matter expert in physics and astronomy, I edited manuscripts into suitable formatting for Nature, Elsevier, and other journal companies.

**Engineer**      Astro-Physics Inc.  
11250 Forest Hills Road, Machesney Park, IL 61115      July 2019 - July 2021  
Assisted development of the Mach 2 mount, CP5 control system, and keypad. Overhauled the keypad and database to properly identify objects for the next 50 years. Designed wiring and circuit board elements, implementing the latest standards and technologies. Implemented a suite of Python test software. Identified new optical black paints to improve resilience and flatness. Managed equipment repairs for astronomical equipment ranging from observatory-scale 360lb mounts to 40 year old consumer electronics. Wrote manuals and provided advanced support for customers with remote observatories.

**Student Assistant**      Texas A&M University  
College Station, TX      Sept. 2016 - May 2019  
Performed data entry and analysis on for the Local Volume Database in Python and PostGRESQL. Later I was tasked with operating .5 m telescopes at the observatory to observe minor planets and exoplanet transits. Reducing observatory data with IRAF and Python, I assisted the observation of asteroid 6478 Gault when it developed a cometary tail.

**PUBLICATIONS**

- 3D Printed Astronomy, July 2022 **Shreveport Bossier Astronomical Society**
- Applied Photonics in Amateur Astronomy, Sept 2021 **Rockford Astronomical Society**
- DIY Amateur Particle Astronomy, Feb 2021 **Rockford Astronomical Society**

- VizieR Online Data Catalog: Identification of RR Lyrae stars from the DES (Stringer+, 2019) **The Astronomical Journal**
- Identification of RR Lyrae Stars in Multiband, Sparsely Sampled Data from the Dark Energy Survey Using Template Fitting and Random Forest Classification (Stringer, 2019) **The Astronomical Journal**

## PROJECTS

**Development of Mount Control Test Systems:** Developed a number of testing approaches to automate bottlenecks in mount assembly and deployment, using combinations of Arduino microcontrollers, Omega2 microcomputers, Python scripted data analysis and circuit board design. Reduced time spent testing by an order of magnitude while improving test quality to catch sub-arcsecond scale defects in mount control. Work done at Astro-Physics Inc.

**Local Volume Database:** Managed dwarf galaxy data sterilization, input, organization and management for the Local Volume Database in conjunction with Fermilab and researchers at Texas A&M University. I developed methods in Python for scraping web data, data query operations in PostGRESQL, and presented findings at the TAMU Astrophysics Symposium. Data collected and managed for this project was published in the paper Identification of RR Lyrae stars in multiband, sparsely-sampled data from the Dark Energy Survey using template fitting and Random Forest classification. <https://arxiv.org/abs/1905.00428>.

**1u Cubesat Quality Control/Payload:** Led a team of 5 other students, directed research and developed the sensor payload and electronics suite for a 1u earth observation cubesat, with the goal of tracking piracy along the east African coastline. Helped develop a framework to track cargo ships the moment onboard radio equipment is disabled, augmenting coastal radar emplacements, Navy radar, and LoS observations. Presented to the SEDS Cubesat competition in 2019. Advisor: Dr. Ryan Ewing.

**Statistical Analysis of Wide Binary Stars with GAIA DR 2:** Analyzing the statistical number of wide binary pairs in the direction of the NGP. This will shed light on the completeness of current wide binary catalogs in the direction. Wide binary stars are a powerful fossil record of perturbation in the region, and can be used to infer dark matter activity in the past.

## SKILLS

**Languages:** Python, HTML, PostGRESQL, Java, Javascript, C++, LaTeX

**Engineering:** KiCad, OnShape, SolidWorks, SMT Soldering, 3D Printing

**Astronomy Software:** Deep Sky Stacker, APCC, TheSkyX, ASCOM, IRAF, Astropy

**Operating Systems:** Windows, Linux, Android, Mac

**Certifications:** Ignition 8.1 Core Certification

## Volunteering

**Astronomy and Brews** Self-driven outreach project showcasing the night sky through a telescope in front of bars in the East Texas area. Through consistent effort, 1% of Longview residents have seen the planets through a travel telescope.  
2021 - Present

**Rockford Makerspace Ops Committee:** Volunteer several hours a week operating a makerspace. Duties include teaching classes on intro electronics, tool maintenance, and building development.  
2019 - 2020