Curriculum Vitae — Zachary P. Vanderbosch

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Research Interests

Time-domain astronomy ••• Astronomical Instrumentation & Pipeline Development ••• Light Pollution Modeling & Mitigation ••• Remote Sensing ••• Data mining all-sky surveys ••• White Dwarf Stars & Evolved Planetary Systems ••• Asteroseismology ••• Binary and single star evolution ••• Laboratory astrophysics

Academic Background

California Institute of Technology *2021 – 2024*
Postdoctoral Scholar Research Associate in Astronomy

The University of Texas at Austin *2015 – 2021*
Ph.D. Astronomy
Advisors: Don Winget & Mike Montgomery
Thesis: Pulsations and Planetary Debris: Variable White Dwarfs in Time-Domain Surveys

The University of North Carolina at Chapel Hill *2009 – 2013*
B.S. Astrophysics, *cum laude*

Publications

As of 2025 February, I have been involved in 35 peer-reviewed publications with 607 citations in high-impact journals, 12 of which are first, second, or third author publications with 346 citations.

First/Second/Third Author Refereed Publications:

* *indicates paper written with an undergraduate or graduate student I supervised*

1. *Bhattacharjee, S., **Vanderbosch, Z. P.**, Hollands, M. A., et al., *A ZTF Search for Circumstellar Debris Transits in White Dwarfs: Six New Candidates, one with Gas Disk Emission, identified in a Novel Metric Space*, 2025, submitted to PASP, arXiv:2502.05502
2. Hermes, J. J., Guidry, J., **Vanderbosch, Z. P.**, et al., *Sporadic Dips from Extended Debris Transiting the Metal-rich White Dwarf SBSS 1232+563*, 2025, ApJ, 980, 56
3. **Vanderbosch, Z.**, Hermes, J. J., Winget, D. E., et al., *The Pulsating Helium-atmosphere White Dwarfs. I. New DBVs from the Sloan Digital Sky Survey*, 2022, ApJ, 927, 158
4. Williams, K. A., Hermes, J. J., & **Vanderbosch, Z. P.**, *The Rapid Rotation of the Strongly Magnetic Ultramassive White Dwarf EGGR 156*, 2022, AJ, 164, 131
5. **Vanderbosch, Z.**, Rappaport, S., Guidry, J. A., et al., *Recurring Planetary Debris Transits and Circumstellar Gas around White Dwarf ZTF J0328−1219*, 2021, ApJ, in press, 917, 41
6. *Sanghi, A., **Vanderbosch, Z.**, & Montgomery, M. H., *Identifying Periodic Variable Stars and Eclipsing Binary Systems with Long-Term Las Cumbres Observatory Photometric Monitoring of ZTF J0139+5245*, 2021, AJ, 162, 133

7. *Guidry, J., **Vanderbosch, Z.**, Hermes, J. J., et al., *I Spy Transits and Pulsations: Empirical Variability in White Dwarfs Using Gaia and the Zwicky Transient Facility*, 2021, ApJ, 912, 125

8. Kepler, S. O., Winget, D., **Vanderbosch, Z.**, et al., *The pulsating white dwarf G117−B15A: still the most stable optical clock known*, 2021, ApJ, 906, 7

9. Reding, J., Hermes, J. J., **Vanderbosch, Z.**, et al., *An Isolated White Dwarf with 317 s Rotation and Magnetic Emission*, 2020, ApJ, 894, 19

10. **Vanderbosch, Z.**, Hermes, J. J., Dennihy, E., et al., *A White Dwarf with Transiting Circumstellar Material Far outside the Roche Limit*, 2020, ApJ, 897, 171, Wikipedia

11. Bell, K., Hermes, J. J., **Vanderbosch, Z.**, et al., *Destroying Aliases from the Ground and Space: Super-Nyquist ZZ Cetis in K2 Long Cadence Data*, 2017, ApJ, 851, 24

Co-Author Refereed Publications:

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12. Rodriguez, A. C., El-Badry, K., Suleimanov, V., ..., **Vanderbosch, Z.**, et al., *Cataclysmic Variables and AM CVn Binaries in SRG/eROSITA + Gaia: Volume Limited Samples, X-Ray Luminosity Functions, and Space Densities*, 2025, PASP, 137, 014201

13. Aros-Bunster, C., Schreiber, M. R., Toloza, O., ..., **Vanderbosch, Z.**, et al., *The third known triple white dwarf: The close double white dwarf SDSS J125733.63+542850.5 hosts a white dwarf tertiary*, 2025, A&A Letter, 693, 11

14. van Roestel, J., Rodriguez, A. C., Szkody, P., ..., **Vanderbosch, Z.**, et al., *Cyclotron emitting magnetic white dwarfs in post common envelope binaries discovered with the Zwicky Transient Facility*, 2024, submitted to A&A, arXiv:2412.15153

15. Blomberg, L., El-Badry, K., Breivik, K., ..., **Vanderbosch, Z.**, et al., *The Companion Mass Distribution of Post Common Envelope Hot Subdwarf Binaries: Evidence for Boosted and Disrupted Magnetic Braking?*, 2024, PASP, 136, 124201

16. Li, M. L., Ho, A. Y. Q., Ryan, G., ..., **Vanderbosch, Z.**, *The Nature of Optical Afterglows Without Gamma-ray Bursts: Identification of AT2023lcr and Multiwavelength Modeling*, 2024, arXiv, arXiv:2411.07973

17. Galiullin, I., Rodriguez, A. C., El-Badry, K., ..., **Vanderbosch, Z.**, et al., *Searching for new cataclysmic variables in the Chandra Source Catalog*, 2024, A&A, 690, 374

18. Szkody, P., van Roestel, J., Bell, K. J., **Vanderbosch, Z.**, et al., *Following the Pulsations in the Long-term Cooling of GW Librae and V386 Serpentis*, 2024, AJ, 168, 114

19. Galiullin, I., Rodriguez, A. C., Kulkarni, S. R., ..., **Vanderbosch, Z.**, *A joint SRG/eROSITA + ZTF search: Discovery of a 97-min period eclipsing cataclysmic variable with evidence of a brown dwarf secondary*, 2024, MNRAS, 528, 676

20. Miller, D. R., Caiazzo, I., Heyl, J., ..., **Vanderbosch, Z.**, et al., *An Extremely Massive White Dwarf Escaped From the Hyades Star Cluster*, 2023, ApJL, 956, 41

21. Yamaguchi, N., El-Badry, K., Rodriguez, A. C., ..., **Vanderbosch, Z.**, *Sodium enhancement in evolved cataclysmic variables*, 2023, MNRAS, 524, 740

22. Caiazzo, I., Burdge, K. B., Tremblay, P.-E., ..., **Vanderbosch, Z.**, et al., *A rotating white dwarf shows different compositions on its opposite faces*, 2023, Nature, 620, 61

23. Rodriguez, A. C., Galiullin, I., Gilfanov, M., ..., **Vanderbosch, Z.**, et al., *SRGeJ045359.9+622444: A 55 Minute Period Eclipsing AM Canum Venaticorum Star Discovered from a Joint SRG/eROSITA + ZTF Search*, 2023, ApJ, 954, 63

24. El-Badry, K., Shen, K. J., Chandra, V., ..., **Vanderbosch, Z.**, et al., *The fastest stars in the Galaxy*, 2023, OJAp, 6, 28

25. Burdge, K. B., El-Badry, K., Rappaport, S., ..., **Vanderbosch, Z.**, et al., *Orbital Decay in an Accreting and Eclipsing 13.7 Minute Orbital Period Binary with a Luminous Donor*, 2023, ApJL, 953, 1

26. Rodriguez, A. C., Kulkarni, S. R., Prince, T. A., ..., **Vanderbosch, Z.**, et al., *Discovery of Two Polars from a Crossmatch of ZTF and the SRG/eFEDS X-Ray Catalog*, 2023, ApJ, 945, 141

27. Zhang, Z., Liu, M. C., Morely, C. V., ..., **Vanderbosch, Z.**, et al., *COol Companions ON Ultrawide orbiTS (COCONUTS). III. A Very Red L6 Benchmark Brown Dwarf around a Young M5 Dwarf*, 2022, ApJ, 935, 15

28. Duan, R. M., Zong, W., Fu, J. N., ..., **Vanderbosch, Z.**, et al., *EPIC 228782059: Asteroseismology of What Could Be the Coolest Pulsating Helium-atmosphere White Dwarf (DBV) Known*, 2021, ApJ, 922, 2

29. Lopez, I. D., Hermes, J. J., Calcaferro, L. M., ..., **Vanderbosch, Z.**, et al., *Discovery, TESS Characterization, and Modeling of Pulsations in the Extremely Low-mass White Dwarf GD 278*, 2021, ApJ, 922, 220

30. Szkody, P., Godon, P., Gänsicke, B. T., ..., **Vanderbosch, Z.**, et al., *The Heating and Pulsations of V386 Serpentis after Its 2019 Dwarf Nova Outburst*, 2021, ApJ, 914, 40

31. Casewell, S., Belardi, C., Parsons, S., ..., **Vanderbosch, Z.**, et al., *WD1032 + 011, an inflated brown dwarf in an old eclipsing binary with a white dwarf*, 2020, MNRAS, 497, 3571

32. Kilic, M., Rolland, B., Bergeron, P., **Vanderbosch, Z.**, et al., *A magnetic white dwarf with five H α components*, 2019, MNRAS, 489, 3648

33. Bell, K., Pelisoli, I., Kepler, S. O., ..., **Vanderbosch, Z.**, et al., *The McDonald Observatory search for pulsating sdA stars. Asteroseismic support for multiple populations*, 2018, A&A, 617, 6

34. Bell, K., Gianninas, A., Hermes, J. J., ..., **Vanderbosch, Z.**, et al., *Pruning The ELM Survey: Characterizing Candidate Low-mass White Dwarfs through Photometric Variability*, 2017, ApJ, 835, 180

35. Greiss, S., Hermes, J. J., Gänsicke, B., ..., **Vanderbosch, Z.**, et al., *The search for ZZ Ceti stars in the original Kepler mission*, 2016, ApJ, 457, 2855

Professional Presentations

Talks:

1. *Protecting Night Skies Across Parks and Beyond*, NPS Night Sky Academy, Santa Fe, NM. *2024 October 24*, link to slides

2. *A Census of White Dwarfs Hosting Transiting Planetary Debris*, Dust Devils: Debris Disks in the Sonoran Desert, Tucson, AZ. *2024 March 29*, link to conference website

3. *Searching for Planets around White Dwarfs*, 2023 EAS Annual Meeting, Special Session on Planets not orbiting main sequence stars, Krakow, Poland, *2023 July 13*, **invited talk**

4. *Transiting Planetary Debris: An Overview of Search and Characterization Efforts*, KITP White Dwarf Program, Santa Barbara, CA. *2022 November 10*, link to recording

5. *Discovery and Characterization of Transiting Planetary Debris Systems with Gaia and ZTF*, 22nd European Workshop on White Dwarfs, Tuebingen, Germany, *2022 August 16*

6. *Pulsating Helium-Atmosphere WDs: A Hybrid Approach to Finding new DBVs with Gaia + ZTF + TESS*, Spring ZTF Team Meeting, Paris, France, *2022 May 13*

7. *Probing the Time-Domain Universe for Persistently Variable Stars: New Pulsating and Outbursting White Dwarfs from Gaia, ZTF, and SDSS*, Astronomy Seminar at UFRGS, Brazil, *2021 November 10*, **invited talk**, link to recording

8. *White Dwarfs with Transiting Planetary Debris In the Era of Large Time-Domain Surveys*, Online Meetings on Evolved Stars and Systems (O-MESS), *2021 July 14*, link to recording

9. *The Zwicky Transient Facility as a Variable White Dwarf Discovery Tool*, UT Austin Department of Astronomy, *2020 November 11*

10. *Planetary Debris around White Dwarfs in the Zwicky Transient Facility*, Celebrating ZTF-I & Soft Launch of ZTF-II, Caltech, USA, *2020 October 23*, **invited talk**, link to recording

11. *A ground-based detection of a DBV outburst*, IAU Symposium 357: White Dwarfs as probes of fundamental physics and tracers of planetary, stellar, & galactic evolution, Hilo, Hawaii, USA, *2019 October 21–25*

12. *Variable Stars in ZTF and a Second Case of Transiting Debris around a White Dwarf*, UT Austin Department of Astronomy, *2019 October 3*

13. *Observing Outbursting White Dwarfs in the post-Kepler Era*, TASC5/KASC12 Workshop, MIT/Cambridge, USA, *2019 July 22–26*

14. *A Ground-based Detection of an Outbursting White Dwarf*, UT Austin Department of Astronomy, *2019 April 17*

15. *The Empirical Limits of the DB(A) Instability Strip*, 21st European White Dwarf Workshop, UT Austin, *2018 July 23–27*, link to recording

16. *Redefining the Helium White Dwarf Pulsation Instability Strip with High-Speed Photometry, Uniform Spectroscopy, and Sandia Experiments*, UT Austin Department of Astronomy, *2018 March 21*

Posters:

17. *A Multi-Instrument Approach to Discovery and Characterization of Planetary Debris around White Dwarfs*, Palomar Science Meeting, Pasadena, CA, *2023 June 1–3*, PDF

18. *ZTF J0139+5245: A Second Case of Transiting Circumstellar Debris around a White Dwarf*, IAU Symposium 357: White Dwarfs as probes of fundamental physics and tracers of planetary, stellar, & galactic evolution, Hilo, Hawaii, USA, *2019 October 21–25*, PDF

19. *Empirical Constraints on the DB White Dwarf Instability Strip*, Sandia National Labs: Z Fundamental Science Workshop, Albuquerque, New Mexico, USA, 2019 August 11–14, PDF

20. *The First Ground-Based Detection of an Outburst in a K2 Pulsating Helium Atmosphere White Dwarf*, Kepler and K2 SciCon V, Glendale, California, USA, *2019 March 4–8*, PDF

21. *Asteroseismology of Pulsating Helium Atmosphere White Dwarfs using K2*, TASC4/KASC11 Workshop: First Light in a New Era of Astrophysics, Aarhus University, Denmark, *2018 July 8–13*, PDF

22. *V471 Tauri: Examining Eclipse Timing Variations with Two Independent Clocks*, 20th European White Dwarf Workshop, University of Warwick, UK, *2016 July 25–29*, PDF

Awarded Telescope Time

Keck-I, LRIS Spectrograph	*4 nights as PI — Observed 4 Nights*
Keck-I, HIRES Spectrograph	*3 nights as PI — Observed 3 Nights*
Keck-II, ESI Spectrograph	*2 nights as PI — Observed 2 Nights*
Keck-II, NIRES Spectrograph	*1 night as PI — Observed 1 Night*
Palomar 200-in, CHIMERA Photometer	*12 nights as PI — Observed 8 Nights*
Palomar 200-in, WIRC Near-IR Photometer	*1 night as PI — Observed 1 Night*
Palomar 200-in, DBSP Spectrograph	*7 nights as PI — Observed 6 Nights*
McDonald 2.1-m, ProEM Photometer	*241/128 nights as PI/Co-PI — Observed 216 Nights*
McDonald 2.7-m, Tull Spectrograph	*23 nights as PI — Observed 21 Nights*
McDonald 2.7-m, Coude Guide Photometer	*4 nights as PI — Observed 4 Nights*
HET 10-m, LRS2 Spectrograph	*79/10 hours as PI/Co-I — Used 49/6 hours*
LCOGT 1.0-m Network, Sinistro Imager	*110 hours as PI — Used 91.6 hours*
LCOGT 0.4-m Network, SBIG Imager	*5 hours as PI — Used 4.6 hours*
Gemini North 8.1-m, GMOS Spectrograph	*3.2 hours Fast Turnaround Time as PI*

Science, Project, & Team Management

Night Skies CCD Data Processing Pipeline Upgrades, *Natural Sounds & Night Skies Division (NSNSD)* *December 2024 – Present*

Leading the development of the data processing pipeline for the NSNSD's flagship high-resolution CCD (Charge-Coupled Device) camera system used to measure and document night sky conditions at park units within the National Park Service. Implementing and testing upgrades that modernize the data processing pipeline, replacing dependencies on external licensed software with pure-Python solutions, and upgrading outdated ArcGIS functions to modern versions. Organize frequent meetings with NSNSD night skies team to provide progress updates, give detailed comparisons between outputs and execution times of original and updated pipelines, and brainstorm processing techniques that could lead to future pipeline improvements. [Source]

ZTF Science Working Group Co-Lead, *Caltech* *May 2022 – August 2024*

Serving as co-lead of the Zwicky Transient Facility (ZTF) Galactic stellar variable science working group, organizing and leading bi-weekly science and ZTF operations update meetings for an international group of ≈30 members. For semi-annual ZTF collaboration team meetings (three to-date), organize and present new working group science results, solicit individual science presentations from working group members, and lead working group discussion sessions for the planning and advancement of group-wide efforts, such as ZTF legacy data products/papers and new partnership survey modes. Recently contributed to an NSF proposal for the completion of a unique ZTF survey during the first year of Rubin-LSST observations, providing crucial text/figures for stellar variable science cases that uniquely benefit from ZTF-Rubin overlap.

Quarter Century Sky Project Member, *Caltech* *August 2022 – July 2023*
Member of a collaborative effort to uniformly process photometry from multiple Caltech-led optical surveys to create a database of light curves spanning more than 20 years, the Quarter Century Sky (QCS) project. Organize and lead weekly update meetings with 5–10 people, including the project PIs, the database backend/frontend developer, and an image calibration expert. Responsible for the development and operation of a custom forced photometry pipeline applied to ZTF difference images to produce enhanced ZTF light curves stored in HDF5 file format, and reporting on pipeline status during weekly meetings. Also developing methods for comparing light curve quality from four different pipelines to determine the optimal pipeline choice for QCS. Also made significant contributions to the scientific and technical justifications of two NSF proposals for QCS funding.

Caltech Stellar Variables Group Member, *Caltech* *October 2021 – August 2024*
Member of a highly collaborative group at Caltech including ≈15 postdocs, students, and faculty that share observational, technical, and scientific resources. Contribute to the proposing, planning, and execution of observations at Palomar and Keck observatories, typically observing 2–3 nights per month in service of other group member's programs. Develop documentation and tutorials related to instrument operation and data reduction/analysis, and collaborate on scientific publications. Also develop software tools for our group, and the Caltech astronomy department in general, providing programmatic access of spectroscopic survey products from SDSS-V and DESI and cross-matching with ZTF light curves and other external catalogs.

Teaching and Advising

Research Advisor: *Sam Whitebook, Caltech* *2023 – 2024*
Advising a post-baccalaureate student who is developing a novel method to identify white dwarfs with stable pulsations using Zwicky Transient Facility and TESS photometry. He plans to submit his results to a peer-reviewed journal this year. *Caltech*

SURF Research Mentor: *Soumyadeep Bhattacharjee, Caltech* *2022 – 2024*
Co-advised an undergraduate student during the Caltech Summer Undergraduate Research Fellowship (SURF) program who used Zwicky Transient Facility data to identify light curve statistical metrics that distinguish white dwarf stars with planetary debris transits from other variable white dwarfs. Project continued once Soumyadeep became a Caltech graduate student and has been submitted to a peer-reviewed journal and is under review (Bhattacharjee et al. 2025). *Caltech*

Research Advisor: *Joseph Guidry, UT Undergraduate* *2019 – 2021*
Co-advised an undergraduate student in two research projects, one leading to a poster presented at the TASC5/KASC12 workshop, and another leading to the student's first first-author refereed publication (Guidry et al. 2021, currently with 96 citations!). *UT Austin*

Research Advisor: *Aniket Sanghi, UT Undergraduate* *2020 – 2021*
Advised an undergraduate student in a research project utilizing archival LCOGT images to identify variable stars. This project resulted in the student's first first-author refereed publication (Sanghi et al. 2021). *UT Austin*

Research Mentor: *Freshman Research Initiative* *2018 – 2021*
TA and mentor engaging undergraduate students in genuine research experiences. *UT Austin*

PDP Participant: *ISEE Professional Development Program* *2018*
Actively developed inquiry-based learning activities through the Institute for Scientist & Engineer Educators (ISEE) Professional Development Program, culminating in the design and execution of a 3-class inquiry activity for a 30-student undergraduate research methods course. Co-authored an ISEE journal article describing our program and outcomes (ISEE Article) *UT Austin, UC Santa Cruz*

Teaching Assistant: *AST-309N, Lives and Deaths of Stars* *Fall 2017*
TA for an introductory Astronomy class for non-STEM majors. *UT Austin*

Teaching Assistant: *AST-321, The Future of Humanity* *Fall 2016*
TA for a discussion and writing intensive course for both STEM/non-STEM majors. *UT Austin*

Undergraduate Teaching Assistant: *ASTR-101L, Intro Astronomy Lab* *Spring 2011, 2012, 2013*
Assistant to graduate TA in interactive Astronomy labs. *UNC Chapel Hill*

Instrumentation

ProEM Filter Wheel Upgrade: Designed, assembled, and commissioned a new software-integrated filter wheel, allowing for multi-color photometry with the ProEM photometer on the McDonald 2.1-m telescope. *UT Austin* *2016 – 2017*

Syzygy Optics VPH Gratings: Lab assistant manufacturing and developing production methods for volume phase holographic (VPH) diffraction gratings, primarily for astronomical purposes. *UNC Chapel Hill* *2014 - 2015*

Goodman Spectrograph Camera Shutter Upgrade: Designed a new camera shutter incorporating a GPS-linked Hall-effect sensor to provide accurate shutter open and close times for astronomical imaging. Traveled to the SOAR telescope in Chile to install the new shutter on the Goodman Spectrograph. *UNC Chapel Hill* *2011 – 2012*

Open Source Code, Tutorials, and Documentation

`phot2lc`: An open-source Python package for efficient and interactive extraction of time-series photometry light curves, compatible with the outputs from multiple photometry pipelines (`ccd_hsp`, ULTRACAM, HiPERCAM, MAESTRO) and data acquired from multiple facilities (McDonald 2.1-m, Palomar 200-in, Perkins 1.8-m, Kitt Peak 2.1-m). [Source, Docs, Zenodo]

`ZTF_Tools`: Open-source tools for visualizing and analyzing Zwicky Transient Facility (ZTF) light curve data. Main features are a tutorial notebook (`ztf_quicklook`) for single-source light curve retrieval and periodicity analysis, and code (`bokeh_web_plot`) demostrating how to produce a website-embeddable interactive Bokeh plot. [Source]

`LCO_Phot`: Open-source tools for performing aperture photometry on Los Cumbres Observatory (LCO) 1.0-m telescope images and calibrating to the Pan-STARRS1 magnitude system. [Source]

`Proto-Plotter`: An interactive educational tool developed using Python and TKinter for performing by-eye fits of blackbody functions to the spectral energy distributions of proto-planetary systems. We used this tool in multiple inquiry-based learning activities as part of the ISEE Professional Development Program. [Source, ISEE Article]

Service and Outreach

Caltech Optical Observatories TAC *Fall 2022, Spring 2024*
Served on the Caltech Optical Observatories Time Allocation Committee (TAC) during two separate semesters, reading and providing critical assessments and ratings for more than 60 multi-disciplinary proposals aimed at using a large variety of near-IR to optical instruments on the Palomar 200-in and Keck 10-m telescopes. *Caltech*

Caltech Summer Research Connections (SRC) *Summer 2022,2023*
Served as a research mentor in SRC, a six-week summer program aimed at engaging local high school students in authentic STEM research experiences at Caltech. Worked with groups of five (2022) and two (2023) students, designing weekly presentations and research assignments related to the discovery and characterization of near-Earth objects (NEOs) using the Zwicky Transient Facility. *Caltech*

McDonald 2.1-m Telescope Tours *2017 – 2021*
Provided one-of-a-kind 2.1-m telescope tours and demonstrations to McDonald Observatory visitors and distinguished guests. *Fort Davis, TX*

FRI Science Sprint *October 2018*
Designed and facilitated a 1-day inquiry-based science sprint for 10–15 multidisciplinary undergraduate students in the Freshman Research Initiative (FRI) program. *UT Austin*

Texas Lutheran University *April 2018*
Presentation on observational astronomy and laboratory astrophysics for 25 undergraduates in the society of physics students at Texas Lutheran University. *Seguin, TX*

Westminster Retirement Community *July 2017*
Public presentation on white dwarfs and observational astronomy to 60+ members of an Austin retirement community. *Austin, TX*

TAURUS Seminar *July 2016*
Presentation on observational astronomy to students in the Texas Astronomy Undergraduate Research experience for Under-represented Students (TAURUS) program. *Austin, TX*

Girl Day at UT *Spring 2016*
Volunteered with the preparation of materials and activities for Girl Day, attended by over 8,000 elementary and middle school students. *Austin, TX*

Astronomy on Tap ATX *2015 – 2016*
Volunteered at monthly Astronomy on Tap events which regularly host more than 200 attendees. *Austin, TX*

Skills

Computer Languages:	Python, JavaScript, SQL/ADQL, bash/shell, LaTeX, C, C#, R, git, markdown, reStructuredText, HTML
Software:	TOPCAT, Github, IRAF, Period04, WQED, MOOG, iSpec, MS Office, Google Suite, Autodesk Inventor & Fusion 360, Zemax
Instrumentation:	Precision mill and lathe operation, soldering, PCB design, ray tracing & optics manufacturing