O. Grace Telford, Ph.D.

Carnegie-Princeton Postdoctoral Fellow
Princeton University Department of Astrophysical Sciences
Peyton Hall, 4 Ivy Lane, Princeton, NJ 08544

http://ogtelford.github.io
(716) 352-6579
grace.telford@princeton.edu

Education

University of Washington

Ph.D. in Astronomy with Specialization in Advanced Data Science — 2019

Thesis: "Using Metals and Stars to Constrain Galaxies' Past Gaseous Inflows and Outflows"
Advisors: Julianne Dalcanton and Jessica Werk
Data science coursework: machine learning, database management, data visualization

M.S. in Astronomy — 2014

University of Pittsburgh

B.S. in Physics and Astronomy — 2013
B.S.E. in Bioengineering with Concentration in Signals & Imaging — 2013

Academic Positions

Princeton University & Carnegie Observatories

Carnegie-Princeton Postdoctoral Fellow — 2023 –

Rutgers University

Postdoctoral Associate — 2019 – 2023

University of Washington

NSF Graduate Research Fellow — 2016 – 2019
NSF Big Data IGERT Fellow — 2014 – 2016
Teaching Assistant — 2013 – 2014

University of Pittsburgh

Undergraduate Researcher in Physics & Astronomy — 2010 – 2013
Undergraduate Researcher at the Simulation & Medical Technology Center — 2009 – 2012

National Solar Observatory

NSF REU Student — 2010

Awarded Grants and Telescope Time

PI of NASA Keck Observatory Program 2025B_N091 – 1 night, $16k — 2025

Co-I of JWST Cycle 4 Program GO-7800 – 20 hours — 2025

Co-I of JWST Cycle 4 Program GO-7396 – 42 hours — 2025

Co-I of HST Cycle 32 Program GO-17833 – 162 orbits — 2024

PI of NASA Keck Observatory Program 2024B_N014/N015 – 2.5 nights, $21k — 2024

Co-I of JWST Cycle 3 Program GO-5255 – 14.7 hours — 2024

PI of NASA Keck Observatory Program 2024A_N063 – 1.5 nights, $16k — 2023

PI of Hubble Space Telescope Cycle 31 Treasury Program GO-17491 – 110 orbits, $269k — 2023

Co-PI of Hubble Space Telescope Cycle 31 Program AR-17557 2023
PI of JWST Cycle 2 Program GO-3449 – 15.4 hours, $191k 2023
PI of NASA Keck Observatory Program 2023A_N048 – 1 night, $15k 2022
Co-I of Hubble Space Telescope Cycle 30 Program GO-17102 – 16 orbits 2022
PI of NASA Keck Observatory Program 2022B_N011 – 1 night, $14k 2022
PI of Hubble Space Telescope Mid-Cycle 29 Program GO-16920 – 14 orbits, $109k 2022
PI of Hubble Space Telescope Cycle 29 Program GO-16767 – 32 orbits, $357k 2021
PI of NASA Keck Observatory Program 2021B_N194 – 1 night, $12k 2021
Co-I of ALMA Cycle 8 Program 2021.1.00169.S – 14.9 hours 2021
Co-I of JWST Cycle 1 Program GO-1617 – 35.7 hours 2021
PI of Hubble Space Telescope Cycle 28 Program AR-16155 – $158k 2020
Co-I of Hubble Space Telescope Cycle 28 Program AR-16144 2020
Co-I of NASA Keck Observatory Program 2020B_N194 – 1 night 2020
Co-I of Gemini Observatory Program GS-2020B-FT-201 – 13.7 hours 2020
Co-I of Hubble Space Telescope Mid-Cycle 27 Program GO-16048 – 13 orbits 2019

Fellowships

Carnegie-Princeton Postdoctoral Fellowship 2023
NASA Hubble Postdoctoral Fellowship (Declined) 2023
Momental Foundation Mistletoe Research Fellowship 2022
NSF Graduate Research Fellowship 2015
NSF Integrative Graduate Education and Research Traineeship for Data Science 2014

Teaching & Mentoring

Research Advising Experience:

Abby Mintz (Princeton) – analyzed DEIMOS spectra of NGC 3109 (PI: Telford) 2023 – 2025
Ciarán Furey (Amsterdam, co-advised) – master's thesis on metal-poor O stars 2023 – 2025
Arya Lakshmanan (Rutgers) – Henry Rutgers Scholar Award for senior thesis 2021 – 2023
Avery Kiihne (Rutgers) – Chambliss Award Honorable Mention at AAS #238 2019 – 2021
Olivia Petry, Travis Mandeville (UW Pre-Major in Astronomy Program) 2017 – 2018

Instructor for Courses and Workshops:

Instructor for the Princeton Undergraduate Summer Research Program Bootcamp 2024
Guest Lecturer for Astronomy 522: Extragalactic Astronomy at Princeton University 2023
Guest Lecturer for Physics 342: Principles of Astrophysics at Rutgers University 2023
Rutgers JWST Proposal Tools Workshop (**lead organizer**) 2020

Software Carpentry Workshops (taught Python, Linux, Git, and GitHub) 2017 – 2018

TA for undergraduate courses: Introduction to Astronomy, The Planets 2013 – 2014

Leadership, Service, & Inclusion Work

Lead organizer of a 3-week Aspen Center for Physics 2025 Summer Workshop 2024 –
- "Cosmic Change Agents: Massive Stars in the Early Universe"

PI of the Treasury of Extremely Metal-Poor O Stars (TEMPOS) Collaboration 2023 –

Member of Habitable Worlds Observatory Working Groups 2023 –

Lead of XShootU Collaboration Working Group 9 on Massive Star Feedback 2022 –

Referee for the Astrophysical Journal, Astronomy & Astrophysics 2016 –

Lead of seminars on applying for postdoctoral positions (Rutgers & Princeton) 2022 – 2024

Completed Advancing Inclusive Mentoring (AIM) Training at Carnegie Science 2024

Time Allocation Committee Member for HST Cycle 28, 29 and JWST Cycle 2 2020 – 2023

Founding co-organizer of Rutgers Physics Equity & Inclusion Journal Club 2020 – 2021

Selected Recent Talks

Invited Seminars & Colloquia:

Aspen Center for Physics Colloquium 2025

NASA Goddard Space Flight Center Colloquium 2025

University of Utah Physics and Astronomy Colloquium 2025

Penn State Astronomy & Astrophysics Seminar 2024

UC Santa Cruz Astronomy & Astrophysics Seminar 2024

Invited Conference Talks:

STScI Spring Symposium: The Intersection Between Stars and the ISM 2025

KITP Conference: Cosmic Dawn Revealed by JWST 2024

UV Galaxies 2023: Illuminating Galaxy Properties Across Cosmic Time 2023

Lorentz Center Workshop "ULLYSES Sets Sail" 2022

Splinter Meeting on Early ULLYSES Results at AAS #240 2022

Wolfe Symposium (Conference on the CGM) 2022

Press

Rutgers press release for McQuinn, Newman, Skillman, Telford et al. (2024) 2025

Astrobites summary of results presented in Telford et al. (2023) 2024

Armagh Observatory & Planetarium press release for XShootU Survey Paper 2023

Results from Telford et al. (2021) profiled in an article for PNAS Front Matter 2022

Publications

27 astrophysics papers published or under peer review (see papers on ADS)
Summary statistics from ADS: 4364 citations, h-index = 13

First-Author Papers (7):

7. "Molecular Hydrogen in the Extremely Metal-Poor, Star-Forming Galaxy Leo P"
Telford, O. G., Sandstrom, K., McQuinn, K., Glover, S., Tarantino, L., Bolatto, A., and Rickards Vaught, R. 2025, Nature, DOI: 10.1038/s41586-025-09115-7

6. "Observations of Extremely Metal-Poor O Stars: Weak Winds and Constraints for Evolution Models"
Telford, O. G., Chisholm, J., Sander, A., Ramachandran, V., McQuinn, K., and Berg, D. 2024, ApJ, 974 85

5. "The Ionizing Spectra of Extremely Metal-Poor O Stars: Constraints from the Only H II Region in Leo P"
Telford, O. G., McQuinn, K., Chisholm, J., and Berg, D. 2023, ApJ, 943, 65

4. "Far-Ultraviolet Spectra of Main-Sequence O Stars at Extremely Low Metallicity"
Telford, O. G., Chisholm, J., McQuinn, K., and Berg, D. 2021, ApJ, 922, 191

3. "Mass-to-Light Ratios of Spatially Resolved Stellar Populations in M31"
Telford, O. G., Dalcanton, J., Williams, B., Bell, E., Dolphin, A., Durbin, M., and Choi, Y. 2020, ApJ, 891, 32

2. "Spatially Resolved Metal Loss from M31"
Telford, O. G., Werk, J., Dalcanton, J., and Williams, B. 2019, ApJ, 877, 120

1. "Exploring Systematic Effects in the Relation between Stellar Mass, Gas Phase Metallicity, and Star Formation Rate"
Telford, O. G., Dalcanton, J., Skillman, E., and Conroy, C. 2016, ApJ, 827, 35

Contributing-Author Papers (20):

20. "Counting Little Red Dots at $z < 4$ with Ground-based Surveys and Spectroscopic Follow-up"
Ma, Y. et al. (including **Telford, O. G.**) 2025, submitted to ApJL, arXiv:2504.08032

19. "The wind properties of O-type stars at sub-SMC metallicity"
Furey, C.†, **Telford, O. G.**, de Koter, A., Backs, F., Brands, S., Vink, J., Kaper, L., Gomez-Mantecon, J., Tramper, F., and Garcia, M. 2025, A&A, 698, A9
†*Student-led paper, co-advised by Grace Telford & Alex de Koter*

18. "A Spectroscopic Survey of Metal-Poor OB Stars in Local Dwarf Galaxy NGC 3109"
Mintz, A.†, **Telford, O. G.**, Kirby, E., Chisholm, J., McQuinn, K., and Berg, D. 2025, ApJ, 985, 150
†*Student-led paper analyzing data from NASA Keck Program 2023A_N048 (PI: Telford)*

17. "X-Shooting ULLYSES: Massive Stars at Low Metallicity X. Physical Parameters and Feedback of Massive Stars in the LMC N11 B Star-Forming Region"
Gómez-González et al. (including **Telford, O. G.**) 2025, A&A, 695, 197

16. "Early Bright Galaxies from Helium Enhancements in High-Redshift Star Clusters"
Katz, H., Ji, A., **Telford, O. G.**, and Senchyna, P. 2024, OJAp, 9, 160

15. "The Ancient Star Formation History of the Extremely Low-Mass Galaxy Leo P: An Emerging Trend of a Post-Reionization Pause in Star Formation"
McQuinn, K., Newman, M., Skillman, E., **Telford, O. G.**, Brooks, A., Adams, E., Berg, D., Boyer, M., Cannon, J., Dolphin, A., Pahl, A. Rhode, K., Salzer, J., Cohen, R., and Goldman, S. 2024, ApJ, 976, 60

14. "An Empirical Calibration of the Tip of the Red Giant Branch Distance Method in the Near Infrared. II. JWST NIRCam Wide Filters"
Newman, M., McQuinn, K., Skillman, E., Boyer, M., Cohen, R., Dolphin, A., and **Telford, O. G.** 2024, ApJ, 975, 195

13. "Scylla III. The Outside-In Radial Age Gradient in the Small Magellanic Cloud and the Star Formation Histories of the Main Body, Wing and Outer Regions"
Cohen et al. (including **Telford, O. G.**) 2024, ApJ, 975, 43

12. "Scylla II. The Spatially Resolved Star Formation History of the Large Magellanic Cloud Reveals an Inverted Radial Age Gradient"
Cohen et al. (including **Telford, O. G.**) 2024, ApJ, 975, 42

11. "The Scatter Matters: Circumgalactic Metal Content in the Context of the M-σ Relation"
Sanchez, N., Werk, J., Christensen, C., **Telford, O. G.**, Tremmel, M., Quinn, T., Mead, J., Sharma, R., and Brooks, A. 2024, ApJ, 967, 100

10. "An Empirical Calibration of the Tip of the Red Giant Branch Distance Method in the Near Infrared. I. HST WFC3/IR F110W and F160W Filters"
Newman, M., McQuinn, K., Skillman, E., Boyer, M., Cohen, R., Dolphin, A., and **Telford, O. G.** 2024, ApJ, 966, 175

9. "A Comprehensive Investigation of Metals in the Circumgalactic Medium of Nearby Dwarf Galaxies"
Zheng, Y., Faerman, Y., Oppenheimer, B., Putman, M., McQuinn, K., Kirby, E., Burchett, J., **Telford, O. G.**, Werk, J., and Kim, D. 2024, ApJ, 960, 55

8. "Spatially-Resolved Recent Star Formation History in NGC 6946"
Tran, D., Williams, B., Levesque, E., Lazzarini, M., Dalcanton, J., Dolphin, A., Koplitz, B., Smercina, A., and **Telford, O. G.** 2023, ApJ, 954, 211

7. "X-Shooting ULLYSES: massive stars at low metallicity. I. Project Description"
Vink, J., et al. (including **Telford, O. G.**) 2023, A&A, 675, A154

6. "The Panchromatic Hubble Andromeda Treasury: Triangulum Extended Region (PHATTER) II. The Spatially Resolved Recent Star Formation History of M33" Lazzarini, M., et al. (including **Telford, O. G.**) 2022, ApJ, 934, 76

5. "Star Formation Histories from SEDs and CMDs Agree: Evidence for Synchronized Star Formation in Local Volume Dwarf Galaxies over the Past 3 Gyr" Olsen, C., Gawiser, E., Iyer, K., McQuinn, K., Johnson, B., **Telford, O. G.**, Wright, A., Broussard, A., and Kurczynski, P. 2021, ApJ, 913, 45

4. "CANDELS Visual Classifications: Scheme, Data Release, and First Results" Kartaltepe, J., et al. (including **Telford, O. G.**) 2015, ApJS, 221, 11

3. "The host galaxies of X-ray selected active galactic nuclei to z = 2.5: Structure, star formation, and their relationships from CANDELS and Herschel/PACS" Rosario, D., et al. (including **Telford, O. G.**) 2015, A&A, 573, A85

2. "CANDELS: The Cosmic Assembly Near-infrared Deep Extragalactic Legacy Survey – The Hubble Space Telescope Observations, Imaging Data Products, and Mosaics" Koekemoer, A., et al. (including **Telford, O. G.**) 2011, ApJS, 197, 36

1. "CANDELS: The Cosmic Assembly Near-infrared Deep Extragalactic Legacy Survey" Grogin, N., et al. (including **Telford, O. G.**) 2011, ApJS, 197, 35

Other Publications:

1. "X-Shooting ULLYSES: Massive Stars at Low Metallicity" Vink, J., et al. (including **Telford, O. G.**) 2024, ESO Messenger, arXiv:2405.00085

2. "Gaussian Mixture Models Use-Case: In-Memory Analysis with Myria" Maas, R., Hyrkas, J., **Telford, O. G.**, Balazinska, M., Connolly, A., and Howe, B. 2015, *Proceedings of the 3rd Very Large Databases Workshop on In-Memory Data Management*
   • NB: computer science paper not reflected in ADS statistics; 12 citations.