CURRICULUM VITA

August 2025

1. Name:

Michelle Amanda Berg

2. Contact Information:

Texas Christian University
Dept. of Physics & Astronomy
2800 South University Dr.
Sid W. Richardson Bldg, Room 374
Fort Worth, TX 76129

m.a.berg@tcu.edu
http://mberg3.github.io
Lab: SWR 312 & 313
Office: +1 (817) 257-4968
ORCID: 0000-0002-8518-6638

3. Academic Background:

A. Education:

Ph.D. in Physics	University of Notre Dame	Jan. 2022
M.S. in Physics	University of Notre Dame	Jan. 2018
B.S. in Physics	Florida Institute of Technology	May 2014

i. Ph.D. Thesis:

Title: *The Role of Dense Circumgalactic Gas in Shaping Galaxies*

Advisors: Dr. Jay Christopher Howk and Dr. Nicolas Lehner

B. Professional Certification:

Not Applicable

C. Present Rank:

Assistant Professor of Physics & Astronomy

D. Year of Appointment to the University and Rank:

2024–present, Assistant Professor of Physics & Astronomy

E. Year of Last Promotion:

None

F. Previous Teaching/Research Appointments:

i. Previous Teaching Appointments:

Teaching Assistantship, Fall 2014–Spring 2016, University of Notre Dame
Course: Descriptive Astronomy
Duties: Observatory support for student projects, exam grader

Teaching Assistantship, Fall 2014–Spring 2016, University of Notre Dame
Course: Elementary Cosmology
Duties: Observatory support for student projects, exam grader

Teaching Assistantship, Spring 2016, University of Notre Dame
Course: Engineering Physics I: Mechanics
Duties: Guide students through problem sets, exam grader

Teaching Assistantship, Fall 2015, University of Notre Dame
Course: Modern Observational Techniques
Duties: Observatory support for student projects, homework grader

Teaching Assistantship, Fall 2014, Spring 2015, University of Notre Dame
Course: Engineering Physics II: Electromagnetism
Duties: Guide students through problem sets, exam grader

ii. Previous Research Positions:

Research Assistantship: Aug 2016 – Jan 2022, University of Notre Dame
Description: Covering factor measurements of luminous red galaxies
Supervisor: Dr. Chris Howk and Dr. Nicolas Lehner

Research Assistantship: Aug 2016 – Jan 2022, University of Notre Dame
Description: Identification and characterization of associated galaxies from halo gas
Supervisor: Dr. Chris Howk and Dr. Nicolas Lehner

Research Assistantship: Aug 2016 – Jan 2022, University of Notre Dame
Description: Metallicity distribution function determination of luminous red galaxies
Supervisor: Dr. Chris Howk and Dr. Nicolas Lehner

Research Assistantship: May – Aug 2013, University of Notre Dame NSF-REU
Description: Mechanical design draft of iLocator spectrograph
Supervisor: Dr. Justin Crepp

Research Assistantship: Jan 2013 – May 2014, Florida Institute of Technology
Description: Constrain outflows rates of active galactic nuclei
Supervisor: Dr. Daniel Batcheldor

Research Assistantship: May – Aug 2012, SARA NSF-REU
Description: Measured lightcurve changes of active galactic nuclei
Supervisor: Dr. Daniel Batcheldor

G. Previous Professional Positions:

Sept 2021 – July 2024, Postdoctoral Fellow,
University of Texas at Austin, Department of Astronomy
Description: Research on Lyman continuum escape and tomography studies.
Teaching and Education/Public outreach activities, including REU supervision, public observing and talks.
Mentor: Dr. John Chisholm

H. Professional Continuing Education:

Not Applicable

I. Professionally Related Honors and Awards:

2014 Northrop Grumman Student Design Showcase President's Cup Award
2014 Northrop Grumman Student Design Showcase Best in Show
2014 Distinguished Student Scholar
2013 Outstanding Student Award in Astronomy/Astrophysics
2013 Outstanding Student Award in Physics
2013 Distinguished Student Scholar

4. Teaching:

A. TCU Courses Taught/In progress: *Italics indicate research/special topics courses*

i. Undergraduate Courses 'CORE':

PHYS 10273	2-hr Lecture	$\times 2$	Intro Astronomy:Earth & Planets
PHYS 10273	2-hr Lab	$\times 1$	Intro Astronomy:Earth & Planets Lab

ii. Undergraduate Courses 'Major':

PHYS 20484	3-hr Lecture	$\times 1$	Physics II with Lab
PHYS 30493	3-hr Lecture	$\times 1$	Physics III Modern Physics
PHYS 30003	Research	$\times 1$	*Junior Honors Research (Research)*

iii. Graduate Research/Thesis/Dissertation Courses:

PHYS 60970	Research	*Research Problems (Research)*

B. Courses developed at TCU:

None

C. Honors projects directed, or committee service:

i. Honors Projects Supervised:

Ahabar Hossain (2025–2026) – *TBD*

ii. Honors Projects Committee Membership:

None

D. Graduate theses and dissertations directed, or committee service:

i. Graduate Dissertations and Theses Directed:

a. *Ph.D. Dissertation (Ph.D. Degree Awarded):*

None

b. *Masters Thesis (M.S. Degree Awarded):*

None

c. *Dissertation Proposal Defense*

None

ii. Membership on Ph.D. Dissertation Committees:

Natalie Myers June 19, 2025

iii. Membership on M.S. Thesis Committees:

None

iv. Membership on M.A. Thesis/Coursework Committees:

None

v. Membership on "Dissertation Proposal" Examination Committees:

Ugur Topkiran April 15, 2025

vi. Membership on non-TCU Graduate Committees:

None

E. External support received or pending for academic work:

None

F. Internal support for academic work received:

None

G. Professional Development:

Faculty Teaching Institute workshop attendee (Jun 2025)

Advanced Certificate of Completion for Teaching Preparation Series at UT Austin (Spring 2024)

H. Other Teaching Activities:

3. University of Texas at Austin Astronomy Graduate Student Observing Program (Spring 2023, Summer 2024)

   – Co-wrote a proposal for a observing workshop and McDonald Observatory trip for astronomy graduate students to fill their knowledge gap with seminars on observing, instrumentation, data reduction, and proposal writing. Co-organized an observing trip to McDonald Observatory where 11 students completed four observing projects (one at each telescope) tp gain skills in observing with ground-based telescopes. Lead of McDonald Observatory trip for logistics and observer trainings. Co-created the student observing projects focused on McDonald instrumentation. Co-trained the students on how to observe with the McDonald telescopes. Co-created surveys to assess the student growth and enthusiasm for observing. Co-presented the program and outcomes to the Astronomy department with recommendations to continue the program and/or integrate it into a graduate observing course.

2. University of Texas at Austin Substitute Lecturer

   – Galaxies, Quasars, and the Universe (Spring 2024). Delivered five 50-minute lectures to (100) non-science undergraduate students (ranging from freshman to seniors) on the scale and history of the universe, galaxy evolution, dark matter, and dark energy.

   – Introduction to Astronomy (Fall 2022). Delivered two 50-minute lectures to (70) non-science undergraduate students (ranging from freshman to seniors) on dark matter, and dark energy, the fate of the universe, and life in the universe.

1. University of Notre Dame Physics Practicum

   – Delivered three lectures for the 75-minute class Physics of Astrophysics to 10 physics students with an observer. Received peer-evaluations from professors and reflected on teaching and lecture goals. Topics covered: ionization equilibrium, thermal equilibrium, and emission line diagnostics.

5. Research and Creative Activity:

ORCID: https:/orcid.org/0000-0002-8518-6638 NASA ADS Link

Research Interests: I am an observational astrophysicist interested in understanding galaxy evolution and the baryon cycle through the gas dynamics, metallicity content, and interplay between the interstellar medium, circumgalactic medium, and intergalactic medium, and their connection to the galaxy. The escape of Lyman continuum photons is also highly affected by these regions. Additionally, I am interested in galaxy quenching and how the environment (groups and clusters) plays a role in this process.

Skills: Expert in UV/optical spectral analysis (long-slit, echelle, slitless grism, and IFU); observing experience with Keck/HIRES and KCWI, Magellan/MIKE, HJST/GCMS, and the Green Bank Telescope; Python and IDL coding languages; proficient in Cloudy, DESI redrock, SExtractor, kcorrect, and pPXF software tools.

Time Awarded on Telescopes: James Webb Space Telescope 7.5 hours as PI, Hobby-Eberly Telescope 46 hours as PI, Harlan J. Smith Telescope 14 nights as PI, Otto Struve Telescope 1 night as PI, Hubble Space Telescope 269 orbits as Co-I, Green Bank Telescope 571 hours as Co-I, Keck 10-m telescope 1 night as Co-I, Magellan 6.5-m telescope 1 night as Co-I, Gemini 8.1-m telescope 3.6 hours as Co-I.

Observing Experience: Green Bank Telescope 145.75 hours, Harlan J. Smith Telescope 14 nights, Otto Struve Telescope 6 nights, McDonald Observatory 0.9m 1.5 nights, McDonald Observatory 0.8m 1 night, Keck Telescopes 1.5 nights, Magellan Baade Telescope 1 night, SARA Kitt Peak Telescope 1 night.

A. Refereed Publications In Print

(**Undergraduate TCU Student; * TCU graduate student; † REU student, ♮ TAURUS student)

10. Parker, K.S., Berg, D.A., Gazagnes, S., Chisholm, J., James, B.L., Hayes, M., Heckman, T., Henry, A., **Berg, M.A.**, Arellano-Cordova, K.Z., Xu, X., Erb, D.K., Martin, C.L., Hu, W., Skillman, E.D., McQuinn, K.B.W., Chen, Z., Stark, D.P., 2024, "CLASSY XI: Tracing Neutral Gas Properties Using UV Absorption Lines and 21-cm Observations," *The Astrophysical Journal*, 977, 104

9. Galaz, G., González-López, J., Guzmán, V., Messias, H., Junais, Boissier, S., Epinat, B., Weilbacher, P.M., Puzia, T., Johnston, E.J., Amram, P., Frayer, D., Blaña, M., Howk, J.C., **Berg, M.A.**, Bustos-Espinoza, R., Muñoz-Mateos, J.C., Cortés, P., García-Appadoo, D., Jaochimi, K., 2024, "First Detection of Molecular Gas in the Giant Low Surface Brightness Galaxy Malin 1," *The Astrophysical Journal Letters*, 975, L26

8. **Berg, M.A.**, Lehner, N., Howk, J.C., O'Meara, J.M., Schaye, J., Straka, L.A., Cooksey, K.L., Tripp, T.M., Prochaska, J.X., Oppenheimer, B.D., Johnson, S.D., Muzahid, S., Bordoloi, R., Werk, J.K., Fox, A.J., Katz, N., Wendt, M., Peeples, M.S., Ribaudo, J., Tumlinson, J.,

2023 "The Bimodal Absorption System Imaging Campaign (BASIC) I. A Dual Population of Low-metallicity Absorbers at z<1," *The Astrophysical Journal*, 944, 101

7. Lehner, N., Berek, S.C., Howk, J.C., Wakker, B.P., Tumlinson, J., Jenkins, E.B., Prochaska, J.X., Augustin, R., Ji, S., Faucher-Giguère, C., Hafen, Z., Peeples, M.S., Barger, K.A., **Berg, M.A.**, Bordoloi, R., Brown, T.M., Fox, A.J., Gilbert, K.M., Guhathakurta, P., Kalirai, J.S., Lockman, F.J., O'Meara, J.M., Pisano, D. J., Ribaudo, J., Werk, J.K., 2020, "Project AMIGA: The Circumgalactic Medium of Andromeda," *The Astrophysical Journal*, 900, 9

6. **Berg, M.A.**, Howk, J.C., Lehner, N., Wotta, C.B., O'Meara, J.M., Bowen, D.V., Burchett, J.N., Peeples, M.S., Tejos, N., 2019, "The Red Dead Redemption Survey of Circumgalactic Gas About Massive Galaxies. I. Mass and Metallicity of the Cool Phase," *The Astrophysical Journal*, 883, 5

5. Rose, B.M., Garnavich, P.M., & **Berg, M.A.**, 2019, "Think Global, Act Local: The Influence of Environment Age and Host Mass on Type Ia Supernova Light Curves," *The Astrophysical Journal*, 874, 32

4. Tadhunter, C., Rodríguez, Z.J., Rose, M., Spence, R.A.W., Batcheldor, D., **Berg, M.A.**, Ramos Almeida, C., Spoon, H.W.W., Sparks, W., Chiaberge, M., 2018, "Quantifying the AGN-driven Outflows in ULIRGs (QUADROS) II: Evidence for Compact Outflow Regions from HST [OIII] Imaging Observations," *Monthly Notices of the Royal Astronomical Society*, 478, 1558

3. Howk, J.C., Wotta, C.B., **Berg, M.A.**, Lehner, N., Lockman, F.J., Hafen, Z., Pisano, D. J., Faucher-Giguère, C., Wakker, B.P., Prochaska, J.X., Wolfe, S.A., Ribaudo, J., Barger, K.A., Corlies, L., Fox, A.J., Guhathakurta, P., Jenkins, E.B., Kalirai, J., O'Meara, J.M., Peeples, M.S., Stewart, K.R., Strader, J., 2017, "Project AMIGA: A Minimal Covering Factor for Optically Thick Circumgalactic Gas Around the Andromeda Galaxy," *The Astrophysical Journal*, 846, 141

2. **Berg, M.A.**, Twadelle, K.F., & Batcheldor, D., 2012, "Optical Monitoring of Three Active Galactic Nuclei," *Journal of the Southeastern Association for Research in Astronomy*, 7, 13

1. Twadelle, K.F., **Berg, M.A.**, & Batcheldor, D., 2012, "Reverberation Mapping of AGN Dusty Tori with Spitzer and IRAC," *Journal of the Southeastern Association for Research in Astronomy*, 7, 17

B1. Non-Refereed Publications Published or In Press:

2. Solis, S.†, **Berg, M.A.**, and Chisholm, J., 2025, "Investigating the Gaseous Content of Massive Galaxy Group Halos," *Astronomical Society of the Pacific Conference Series*, 450, 1

1. Wolter, I.E.♮, **Berg, M.A.**, and Chisholm, J., 2023, "Merger Interactions Enhance Star Formation Rates in Galaxy Group Housing QSO PKS0405–123 and Gaseous Nebulae," *Research Notes of the American Astronomical Society*, 7, 232

B2. Press Releases/Conferences & Press Coverage:

None Currently

C. Refereed Papers Which Have Been Accepted For Publication

None Currently

D1. Talks and Posters Presented at Scholarly Meetings & Conference Proceedings:
(TCU & REU Students shown in *Italic*)

18. **Berg, M.A.** 2025, "LyC Escape and IGM Tomography Using the 600-900Å Continuum of the Sunburst Arc," Escape of Lyman Radiation from Galactic Labyrinths, Crete, Greece, April 8-11, 2025

17. **Berg, M.A.** 2024, "IGM and CGM Tomography Using the 600-900Å Continuum of the Sunburst Arc," Resolving the Circumgalactic Medium and its Impact on Galaxy Evolution, Santa Cruz, Chile, November 18-22, 2024

16. **Berg, M.A.** 2024, "LyC Escape and IGM Tomography Using the 600-900Å Continuum of the Sunburst Arc," 243rd meeting of the American Astronomical Society, January 7-11, 2024

15. **Berg, M.A.** 2023, "The Role of Dense Circumgalactic Gas in Shaping Galaxies," CGM@ND Workshop II, Kylemore, Ireland, September 3-15, 2023 (*Invited*)

14. **Berg, M.A.** 2023, "First Observations of the Stellar Continuum from 600-900Å with the Sunburst Arc," UV Galaxies 2023, Reykjavik, Iceland, July 3-7, 2023 (*Invited*)

13. **Berg, M.A.** 2022, "The Bimodal Absorption System Imaging Campaign (BASIC): A Dual Population of Low-metallicity Absorbers at $z<1$," What Matter(s) Around Galaxies 2022, Champuloc, Italy, September 12-16, 2022

12. **Berg, M.A.** 2022, "Bimodal Absorption System Imaging Campaign: IFU Survey Results," 2022 Arthur M. Wolfe Symposium in Astrophysics, University of California, Santa Cruz, March 21-25, 2022 (*Invited*)

11. **Berg, M.A.** 2022, "Revealing the Stellar Continuum Below the LyC Limit with the Sunburst Arc," 2022 Galaxy Evolution Workshop, University of Texas at Austin, January 13, 2022 (*Invited*)

10. **Berg, M.A.** 2021, "The Circumgalactic Medium and its Effect on Galaxy Evolution," 237th meeting of the American Astronomical Society, January 11-15, 2021

9. **Berg, M.A.** 2020, "The Galaxies Associated With the Bimodal Metallicity Distribution," 235th meeting of the American Astronomical Society, Honolulu, HI, January 4-8, 2020

8. **Berg, M.A.** 2019, "New Results from the RDR and BASIC Programs," What Matter(s) Between Galaxies conference, Abbazia di Spineto, Italy, June 3-7, 2019

7. **Berg, M.A.** 2018, "Unexpected Detection of a Cool Gas Reservoir in the Hot Halos of LRGs," Intergalactic Interconnections conference, Aix Marseille Université, France, July 9-13, 2018

6. Denny, L., Early, L., **Berg, M.A.**, Howk, C., Lehner, N., Lockman, F., Wotta, C., 2018, "Green Bank Telescope Observations of HI in the Circumgalactic Medium of M31," American Astronomical Society, meeting #231. (Poster)

5. **Berg, M.A.** 2017, "A First Look at the Origin of the Bimodal Metallicity Distribution of the Dense z<1 CGM Gas with HST/ACS and VLT/MUSE Observations," What Matter(s) Around Galaxies conference, Durham University, UK, June 19-23, 2017

4. **Berg, M.A.**, Howk, J.C., Lehner, N., Straka, L.A., Schaye, J., O'Meara, J.M., 2017, "VLT/MUSE and HST/ACS Observations of z<1 Galaxies: Origin of the Bimodal Metallicity Distribution of the Lyman Limit Systems," Space Telescope Science Institute 2017 Spring Symposium, STScI, April 24-27, 2017 (Poster)

3. Bechter, E., Bechter, A., Crepp, J.R., **Berg, M.A.**, Carroll, J., Collins, K., Corpuz, T., Ketterer, R., Kielb, E., Stoddard, R., Eisner, J., Gaudi, B.S., Hinz, P., Kratter, K., Macela, G., Quirrenbach, A., Skrutskie, M., Sozzetti, A., Woodward, C.E., Zhao, B., 2014, "The iLocater Doppler Spectrometer," Search for Life Beyond the Solar System, Tucson, Arizona, March 17-21, 2014 (Poster)

2. Crepp, J.R., Bechter, A., Bechter, E., **Berg, M.A.**, Carroll, J., Collins, K., Corpuz, T., Ketterer, R., Kielb, E., Stoddard, R., Eisner, J.A., Gaudi, B.S., Hinz, P., Kratter, K.M., Macela, G., Quirrenbach, A., Skrutskie, M.F., Sozzetti, A., Woodward, C.E., Zhao, B., 2014, "iLocater: A Diffraction-Limited Doppler Spectrometer for the Large Binocular Telescope," American Astronomical Society, meeting #223. (Poster)

1. Twadelle, K., **Berg, M.A.**, & Batcheldor, D., 2013, "Reverberation Mapping of AGN Dusty Tori in the Infrared," American Astronomical Society, meeting #221. (Poster)

D2. Student Presentations (as primary advisor) (TCU & REU Students shown in ***Italic***):

2. *Solis, S.*†, **Berg, M.A.**, Chisholm, J., 2025, "Investigating the Gaseous Content of Massive Galaxy Group Halos," American Astronomical Society, meeting #245. (Poster)

1. *Wolter, I.*♮, **Berg, M.A.**, Chisholm, J., Schaye, J., 2024, "Merger Interactions Enhance Star Formation Rates in Galaxy Group Housing QSO PKS0405–123 and Gaseous Nebula," American Astronomical Society, meeting #243. (Poster)

E. Editorships, Consultantships, and Applied Professional Activities:

i. Multi-year/Ongoing Activities:

None

ii. One Time Activities:

2025 Referee of a manuscript for Publications of the Astronomical Society of Australia
2025 Referee of a manuscript for The Astrophysical Journal
2024 Referee of a manuscript for The Astrophysical Journal Letters
2024 NSF proposal peer-reviewer
2024 Subject-matter expert reviewer in a NASA peer review
2023 Hubble Space Telescope Cycle 31 IGM-CGM time allocation review panel member

F. External Support Sought:

i. Received (@TCU):

— PI/Co-I Total: $227k external funds to TCU + $2,100 telescope time

2024, NASA Hubble Space Telescope Cycle 32 AR–17862, Co-Investigator, *Illuminating the Dark Ages of Metal Evolution: An HST Legacy Survey at Cosmic Noon* (**$100,000** for 3 years, no direct money requested for TCU)

2024, NASA Hubble Space Telescope Cycle 32 GO–17711, Co-Investigator, *Imaging a Giant Intragroup Filament associated with a Damped Lyman-alpha System* (**$81,652** for 1 year, no direct money requested for TCU)

2024, James Webb Space Telescope Cycle 3 GO–5394, Principal Investigator, *Untangling the Nature of the Kennicutt Relation at the Low End: the Iconic Case of the Giant Low Surface Brightness Galaxy Malin 1* (**$227,962** for 2 years; awarded at UT Austin, transferred to TCU)

2025–Present, (**$2,100 total – 1 Total Observing Runs**) Monetary value of observing time awarded to me (as principal investigator, or my student(s) being principal investigator) by national and private observatories, assuming a conservative value of $1,000/night/meter of telescope primary diameter. *(See section M. for further details)*

Telescope Time Granted at TCU (**$2,100 total**)
2025: $2,100

ii. Received (Pre-TCU):

— PI/Co-I Total: $1.42M grants/fellowships + $55,433 telescope time

2023, American Astronomical Society International Travel Grant (**$1,171**)

2023, NASA Hubble Space Telescope Cycle 30 GO-17138, Co-Investigator, *Studying Ionizing Photon Escape from a Bright Gravitationally Lensed Reionization Era Analog at z=1.43* (**$90,000** for 1 year)

2022, NASA Hubble Space Telescope Cycle 29 GO-16645, Co-Investigator, *Spectral Imaging of O VI and Ly-alpha from a Giant Intragroup Filament* (**$207,989** for 4 years)

2022, NASA Hubble Space Telescope Cycle 29 GO-16730, Co-Investigator, *Connecting the Smoke to the Fire: Mapping Andromeda's Inner Circumgalactic Medium* (**$445,619** for 4 years)

2022, NASA Hubble Space Telescope Cycle 29 GO-16733, Co-Investigator, *Mapping the Escape of Ly Alpha and Ionizing Photons from an Extreme Emission-line Lensed Galaxy* (**$89,000** for 1 year)

2019, NASA Future Investigators in NASA Earth and Space Science and Technology (FINESST), Future Investigator, *The Role of Dense Circumgalactic Gas in Shaping Galaxies* (**$90,000** for 2 years)

2019, Keck Principal Investigator Data Award PID30/2019A_N051, Co-Investigator, *Directly Testing the Cold/Hot-Mode Accretion Dichotomy with HST and Keck* (**$11,750**)

2018, NASA Hubble Space Telescope Cycle 25 GO-15075, Co-Investigator, *The CGM of Massive Galaxies: Where Cold Gas Goes to Die?* (**$289,598** for 4 years)

2018, NASA Hubble Space Telescope Cycle 25 GO-15313, Co-Investigator, *The AGN Impact on the Circumgalactic Medium of Cen A* (**$203,611** for 5.5 years)

2022–2024, (**$55,433 total – 8 Total Observing Runs**) Monetary value of observing time awarded to me (as principal investigator) by national and private observatories, assuming a conservative value of $1,000/night/meter of telescope primary diameter. *(See section M. for further details)*

Time Granted at UT Austin (**$55,433 total**)

2024:	$2,875
2023:	$49,875
2022:	$2,683

iii. Not Received (@TCU):

Note: For Hubble and James Webb Space Telescope NASA grants, no budget is specified unless the proposal gets through the initial review. Therefore, no dollar amounts are specified on some items below:

2025, NASA Hubble Space Telescope Cycle 33 General Observer, Principal Investigator, *Metal-Poor Gas Accretion in Massive Groups: Does Strangulation Drive the Morphology-Density Relation?* (No funding unless observation approved)

2025, NASA Hubble Space Telescope Cycle 33 General Observer, Co-Investigator, *Illuminating the Physics of the Baryon Cycle with HIGHLIGHTS: the HST Imaging of Galaxy Halo LIGHT Survey* (No funding unless observation approved)

2025, NASA Hubble Space Telescope Cycle 33 General Observer, Co-Investigator, *Building a Sample of Sunburst Arcs: Using UV Slopes of Clumps in Lensed Galaxies to Identify Lyman Continuum Leaker Candidates* (No funding unless observation approved)

2025, NASA Hubble Space Telescope Cycle 33 General Observer, Co-Investigator, *The Hidden Giant of the Cosmos: The First High-Resolution Investigation of Malin 1 and Its Huge Disc* (No funding unless observation approved)

2024, NASA Hubble Space Telescope Cycle 32 Bridge General Observer, Co-Investigator, *The Hidden Giant of the Cosmos: The First High-Resolution Investigation of Malin 1 and Its Huge Disc* (No funding unless observation approved)

2024, NASA James Webb Space Telescope Cycle 4 General Observer, Principal Investigator, *The Curious Case of Malin 1: How Does Star Formation Occur in Extreme Environments?* (No funding unless observation approved)

iv. Not received (Pre-TCU): **— Total Requested but not received: $495,000**

2024, NASA Hubble Space Telescope Cycle 32 General Observer, Principal Investigator, *Investigating the CGM of Close Luminous Red Galaxy Pairs: What is the Underlying Cause of the Morphology-Density Relation in Massive Group Halos?* (No funding unless observation approved)

2024, NASA Hubble Space Telescope Cycle 32 General Observer, Co-Investigator, *Illuminating the Physics of the Baryon Cycle with HIGHLIGHTS: the HST Imaging of Galaxy Halo LIGHT Survey* (No funding unless observation approved)

2023, NASA James Webb Space Telescope Cycle 3 General Observer, Co-Investigator, *Feedback at low metallicity in NGC1569* (No funding unless observation approved)

2023, NASA Keck Semester 2024A, Co-Investigator, *Deep Mapping of Outflows in the CGM of Galaxies with Metal-Rich Absorbers* (No funding unless observation approved)

2023, NASA Keck Semester 2024A, Co-Investigator, *Intragroup Filament* (No funding unless observation approved)

2023, NASA Hubble Space Telescope Cycle 31 General Observer, Principal Investigator, *Investigating the CGM of Close Luminous Red Galaxy Pairs: What is the Underlying Cause of the Morphology-Density Relation in Massive Group Halos?* (No funding unless observation approved)

2023, NASA Hubble Space Telescope Cycle 31 General Observer, Co-Investigator, *The Distribution of Metals at Cosmic Noon* (No funding unless observation approved)

2023, NASA Hubble Space Telescope Cycle 31 General Observer, Co-Investigator, *Imaging a Giant Intragroup Filament associated with a Damped Lyman-alpha System* (No funding unless observation approved)

2022, NASA James Webb Space Telescope Cycle 2 General Observer, Principal Investigator, *PAHs in the NW Star-Forming Region of I Zw 18* (No funding unless observation approved)

2022, NASA James Webb Space Telescope Cycle 2 General Observer, Co-Investigator, *Feedback at low metallicity in NGC1569* (No funding unless observation approved)

2020, NASA XMM-Newton AO 20 General Observer, Co-Investigator, *Investigating the Mysterious Wealth of Cold Gas in Massive Quenched Galaxy Halos* (No funding unless observation approved)

2020, NASA Hubble Space Telescope Cycle 28 General Observer, Co-Investigator, *The Inner Circumgalactic Medium of Andromeda* (No funding unless observation approved)

2019, NASA Hubble Space Telescope Cycle 27 General Observer, Co-Investigator, *Gas Circulation in the Disk-Halo Interface of Andromeda* (No funding unless observation approved)

2018, NASA Earth and Space Science Fellowship (NESSF), Principal Investigator, *The Role of Dense Circumgalactic Gas in Shaping Galaxies* ($90,000 for 2 years)

2017, NASA Earth and Space Science Fellowship (NESSF), Principal Investigator, *Characterizing the Role of the Dense Circumgalactic Gas in Shaping Galaxies* ($135,000 for 3 years)

2017, NASA Hubble Space Telescope Cycle 24 General Observer, Co-Investigator, *The CGM of Massive Galaxies: Where Cold Gas Goes to Die?* (No funding unless observation approved)

2015, NSF Graduate Research Fellowship Program, Principal Investigator ($138,000 for 3 years)

2015, NSF Gemini Semester 2016A, Co-Investigator, *Just the BASICs: Linking Gas Flows in the Circumgalactic Medium to Galaxies* (No funds for observations)

2015, NASA Keck Semester 2016A, Co-Investigator, *Just the BASICs: Linking Gas Flows in the CGM to Galaxies* (No funding unless observation approved)

2014, NSF Graduate Research Fellowship Program, Principal Investigator ($132,000 for 3 years)

v. Under Consideration:

2025, NRAO Green Bank Telescope, Co-Investigator, *The Metallicity of High-velocity Clouds*

G. Internal Support Sought:

i. Received:

2024, University of Texas at Austin McDonald Observatory Discretionary Fund, **$6,884**

2023, University of Texas at Austin McDonald Observatory Research Fund, **$947**

2023, University of Texas at Austin McDonald Observatory Research Fund, **$680**

2023, University of Texas at Austin Extragalactic Astronomy Group Travel Fund, **$500**

2023, University of Texas at Austin McDonald Observatory Research Fund, **$158**

2023, University of Texas at Austin McDonald Observatory Discretionary Fund, **$11,207**

2023, University of Texas at Austin Extragalactic Astronomy Group Travel Fund, **$500**

2022, University of Texas at Austin Extragalactic Astronomy Group Travel Fund, **$750**

2017, University of Notre Dame Graduate School Notebaert Professional Development Fund, **$1,000**

2017, University of Notre Dame Graduate Student Union Conference Presentation Grant, **$350**

ii. Not Received:

None

iii. Under Consideration:

None

H. Student Grants Supervised:

i. External

None

ii. Internal

None

I. Manuscripts Submitted to Refereed Journals and Currently Under Review

3. SDSS Collaboration et al., including **Berg, M.A.**, 2025, "The Nineteenth Data Release of the Sloan Digital Sky Survey," *The Astrophysical Journal Supplement*, *submitted*

2. **Berg, M.A.**, Chisholm, J., Prochaska, J.X., Rivera-Thorsen, T.E., Gladders, M.D., Sharon, K., Leitherer, C., Eldridge, J.J., Bayliss, M., Dahle, H., Rigby, J.R., Verhamme, A., 2025, "Intergalactic Medium Tomography with the Sunburst Arc," *Monthly Notices of the Royal Astronomical Society*, *submitted*

1. Lehner, N., Howk, J.C., Collins, L., Sameer, Wakker, B.P., Augustin, R., Barger, K.A., **Berg, M.A.**, Bordoloi, R., Brown, T.M., Cashman, F.H., Faucher-Giguère, C., Fox, A.J., French, D.M., Gilbert, K.M., Guhathakurta, P., O'Meara, J.M., O'Shea, B.W., Peeples, M.S., Pisano, D.J., Prochaska, J.X., Stern, J., Tumlinson, J., Werk, J.K., Williams, B.F., 2025, "Project AMIGA: The Inner Circumgalactic Medium of Andromeda from Thick Disk to Halo," *The Astrophysical Journal*, *submitted*

J. Presentations Other Than Those At Scholarly Meetings (Colloquium):

2. 2025, "Mapping the Full Baryon Cycle of Galaxies in Emission and Absorption," Baylor University, Waco, TX, March 26, 2025

1. 2025, "Mapping the Full Baryon Cycle of Galaxies in Emission and Absorption," East Texas A&M University, Commerce, TX, March 20, 2025

K. Technical Presentations:

2. 2024, "Data Reduction 101," Astronomy Graduate Student Observing Program, University of Texas at Austin, June 7, 2024

1. 2024, "Observing 101," Astronomy Graduate Student Observing Program, University of Texas at Austin, May 10, 2024

L. Other Presentations:

9. 2025, "Mapping the Full Baryon Cycle of Galaxies in Emission and Absorption," TCU REU Seminar, July 10, 2025

8. 2024, "Mapping the Full Baryon Cycle of Galaxies in Emission and Absorption," Special seminar, Texas Christian University, April 1, 2024 (*Invited*)

7. 2023, "LyC Escape and IGM Tomography Using the 600-900Å Continuum of the Sunburst Arc," Galaxies and Cosmology Seminar, University of Texas at Austin, November 7, 2023

6. 2023, "Is Empty Space Really That Empty?," Public lecture at McDonald Observatory Star Party, McDonald Observatory Visitor Center, March 28, 2023

5. 2021, "The Role of Dense Circumgalactic Gas in Shaping Galaxies," Galaxies and Cosmology Seminar, University of Texas at Austin, September 20, 2021

4. 2021, "The Bimodal Absorption System Imaging Campaign: Origin of the Metal-poor Gas at $z<1$," Astrophysics Brown Bag Lunch Talk, Massachusetts Institute of Technology, March 29, 2021 (*Invited*)

3. 2020, "The Role of Dense Circumgalactic Gas in Shaping Galaxies," CGI Seminar, University of California, Santa Cruz, November 9, 2020 (*Invited*)

2. 2020, "Galaxies with Accretion Signatures at $z<1$," Astrophysics Seminar, University of Notre Dame, October 27, 2020

1. 2019, "The Red Dead Redemption Survey: Cool Gas in the Halos of Massive Galaxies," Astrophysics Seminar, University of Notre Dame, March 19, 2019

M. Meeting/Review Participation (Non-presenter participant)

i. Formal Reviewer

None

ii. Meeting/Workshop Participant

Jan 2025 SDSS V Local Volume Mapper Science Workshop (La Serena, Chile)
Jul 2017 SDSS IV Collaboration Meeting (Santiago, Chile)

N. Telescope Time Awarded by Space- and Ground-based Facilities:
Note: Time is awarded through peer-reviewed proposals. For the large ground-based telescopes (e.g., Keck and the Very Large Telescope), one night is roughly the equivalent of $80,000 to $100,000, if one were able to purchase them. For space-based telescopes such as the Hubble Space Telescope, one orbit is worth significantly more. The Green Bank Telescope operations costs $14,000 a night. Other ground-based telescopes can assume a conservative value of ($1,000/night/meter of telescope aperture [assuming a 10-hr night]) for telescope use.
*(e.g., 4-meter telescope for 4 nights: 4 (nights) * 4 (m) * $1,000 = $16,000)*

i. Time Granted at TCU

Otto Struve Telescope 2.1-m, UT25-3-002, 1 nights, $2,100
TCU Observational Astronomy Undergraduate Trip 2025
PI 2025

ii. Pre-TCU granted telescope time

Hubble Space Telescope, Cycle 32 GO–17711, 14 orbits
Imaging a Giant Intragroup Filament associated with a Damped Lyman-alpha System
PI: Howk, UND 2024

James Webb Space Telescope, Cycle 3 GO–5394, 7.5 hours
Untangling the Nature of the Kennicutt Relation at the Low End: the Iconic Case of the Giant Low Surface Brightness Galaxy Malin 1
PI 2024

Hobby-Eberly Telescope 9.2-m, UT24–2–006, 7.5 hours, $2,875
Spatial Mapping of Intragroup Gas Properties in Emission
PI 2024

Hobby-Eberly Telescope 9.2-m, UT2–3–018, 3 hours, $1,150
Characterizing the Host Galaxy of a Rare Damped Lyman-alpha Absorber Exhibiting Molecular Hydrogen at z<1
PI 2023

Harlan J. Smith Telescope 2.7-m, McD23–3–013, 4 nights, $10,800
Just the BASICs: Linking Gas Flows in the Circumgalactic Medium to Galaxies

PI 2023

Hobby-Eberly Telescope 9.2-m, UT23–2–017, 6.5 hours, $2,492
Spatial Mapping of Intragroup Gas Properties in Emission
PI 2023

Harlan J. Smith Telescope 2.7-m, McD23–2–007, 5 nights, $13,500
Just the BASICs: Linking Gas Flows in the Circumgalactic Medium to Galaxies
PI 2023

Hobby-Eberly Telescope 9.2-m, UT23–1–008, 22 hours, $8,433
Spatial Mapping of Intragroup Gas Properties in Emission
PI 2023

Harlan J. Smith Telescope 2.7-m, McD23–1–006, 5 nights, $13,500
Just the BASICs: Linking Gas Flows in the Circumgalactic Medium to Galaxies
PI 2023

Hubble Space Telescope, Cycle 30 GO–17138, 10 orbits
Studying Ionizing Photon Escape from a Bright Gravitationally Lensed Reionization Era Analog at z=1.43
PI: Mainali, Goddard 2023

Hobby-Eberly Telescope 9.2-m, UT22–3–014, 7 hours, $2,683
Spatial Mapping of Intragroup Gas Properties in Emission
PI 2022

Hubble Space Telescope, Cycle 29 GO–16645, 24 orbits
Spectral Imaging of O VI and Ly-alpha from a Giant Intragroup Filament
PI: Howk, UND 2021

Hubble Space Telescope, Cycle 29 GO–16730, 137 orbits
Connecting the Smoke to the Fire: Mapping Andromeda's Inner Circumgalactic Medium
PI: Lehner, UND 2021

Hubble Space Telescope, Cycle 29 GO–16733, 10 orbits
Mapping the Escape of Ly Alpha and Ionizing Photons from an Extreme Emission-line Lensed Galaxy
PI: Rigby, STScI 2021

Gemini 8.1-m telescope, NSF GN–2020B–FT–103, 3.6 hours, $1,215
Spectroscopy of a Giant [OII] Nebula in a QSO Group
PI: Howk, UND 2020

Green Bank Telescope, NRAO GBT20A–105, 20 hours
Molecular Gas in the Giant LSB Galaxy Malin 1 - Completing 2019 Observations
PI: Galaz, U. Católica 2020

Green Bank Telescope, NRAO GBT19A–326, 32 hours
Detecting Molecular Gas in the Giant Low Surface Brightness Galaxy Malin 1
PI: Galaz, U. Católica 2019

Keck 10-m telescope, NASA NExScI PID30/2019A_N051, 1 night
Directly Testing the Cold/Hot-Mode Accretion Dichotomy with HST and Keck
PI: Howk, UND 2019

Magellan 6.5-m telescope, Chilean National TAC CN2019A-23, 1 night, $6,500
The CGM of Massive Galaxies: Where Cold Gas Goes to Die?
PI: Tejos, U. Católica-Valparaiso 2019

Green Bank Telescope, NRAO GBT18B–296, 175 hours
The Molecular Thick Disk in the Edge-On Galaxy NGC 891
PI: Howk, UND 2018

Green Bank Telescope, NRAO GBT18A–291, 27 hours
Detecting Molecular Gas in the Giant Low Surface Brightness Galaxy Malin 1
PI: Galaz, U. Católica 2018

Green Bank Telescope, NRAO GBT18A–246, 176 hours
Project AMIGA: The Circumgalactic Medium of M31 – The Neutral Component II
PI: Lockman, NRAO 2018

Green Bank Telescope, NRAO GBT17B–155, 57 hours
The Distribution of Optically-Thick Gas in the Halo of Andromeda
PI: Howk, UND 2017

Hubble Space Telescope, Cycle 25 GO–15075, 45 orbits
The CGM of Massive Galaxies: Where Cold Gas Goes to Die?
PI: Howk, UND 2017

Hubble Space Telescope, Cycle 25 GO–15313, 29 orbits
The AGN Impact on the Circumgalactic Medium of Cen A
PI: Lehner, UND 2017

Green Bank Telescope, NRAO GBT16B–139, 72 hours
Project AMIGA: The Circumgalactic Medium of Andromeda – The Neutral Component
PI: Lockman, NRAO 2016

Green Bank Telescope, NRAO GBT16A–433, 12 hours
Reobservation of HI in the M31 Halo Toward AMIGA Sources
PI: Lehner, UND 2016

O. Observing Experience:

i. Texas Christian University

None

ii. University of Texas at Austin

Otto Struve Telescope, Argus/ProEM, 2 nights

McDonald Observatory 0.8m, PFC, 1 night

Otto Struve Telescope, Argus/ProEM, 4 nights

McDonald Observatory 0.9m, eyepiece, 1.5 nights

Harlan J. Smith Telescope, McD23–3–013, GCMS, 4 nights

Harlan J. Smith Telescope, McD23–2–007, GCMS, 5 nights

Harlan J. Smith Telescope, McD23–1–006, GCMS, 5 nights

Green Bank Telescope, GBT22B–359, VEGAS, 3.25 hours

Green Bank Telescope, GBT21B–323, VEGAS, 35.5 hours

iii. University of Notre Dame

Magellan Baade 6.5m Telescope, CN2019A–23, MIKE, 1 night

Keck I Telescope, PID30/2019A_N051, HIRES, 1 night

Keck II Telescope, K356, KWCI, 0.5 nights

Green Bank Telescope, GBT17B–155, VEGAS, 58 hours

Green Bank Telescope, GBT16B–139, VEGAS, 37.5 hours

Green Bank Telescope, GBT16A–433, VEGAS, 6.5 hours

Green Bank Telescope, GBT15A–328, VEGAS, 5 hours

iv. Florida Institute of Technology

SARA Kitt Peak 0.9m Telescope, REU 2012, Imaging CCD, 1 night

P. Professional Development:

Writing Winning Proposals workshop attendee (Dec 2024)

National Center for Faculty Development and Diversity Faculty Success Program participant (Fall 2024)

6. Service (TCU & Professional):

A. Departmental Service:

i. Texas Christian University:

Faculty Search Committee Member: Biophysics (Tenure-track; 2024–2025)

Volunteer for Intro Astronomy: Earth and Planets star party (Fall 2024)

ii. University of Texas at Austin:

External departmental review postdoctoral panel member (Spring 2024)

Postdoc faculty-hire interviewer (Spring 2024)

Astronomy Graduate Student Observing Program organizing committee member (Spring 2024)

McDonald Observatory time allocation committee member (2023–2024)

Astronomy Graduate Student Observing Program organizing committee member (Spring 2023)

TAURUS program McDonald Observatory trip coordinator (Summer 2022)

Postdoc faculty-hire interviewer (Spring 2022)

iii. University of Notre Dame:

Student faculty-hire interviewer (Spring 2021)

Student faculty-hire interviewer (Spring 2020)

Faculty Colloquium Committee student member (2020-2021)

Student faculty-hire interviewer (Spring 2017)

External departmental review student panel member (Fall 2016)

B. College of Science & Engineering (CSE) Service:

CSE Research Fair & Field Day volunteer (Apr 2025)

SRS Faculty volunteer (Apr 2025)

C. University Service:

Frogs First Dinner table host (Aug 2025)

ReFrog volunteer (May 2025)

Frogs First Dinner table host (Aug 2024)

D. Professionally Related Community Activities:

Speaker for Paschal High School Science and Feminist Clubs, Fort Worth, TX (Feb 2025)

Total Eclipse of the Horns volunteer, Austin, TX (Apr 2024)

Supernova Foundation Mentor (2023–2024)

UT Austin STEM Girl Day volunteer, Austin, TX (Feb 2024)

Women in STEM day camp Air and Space Career panel member, Austin, TX (Jun 2023)

Women in STEM day camp Career Conversation Luncheon STEM role model, Austin, TX (Jun 2023)

UT Austin STEM Girl Day volunteer, Austin, TX (Feb 2023)

Women in STEM day camp Career Conversation Luncheon STEM role model, Austin, TX (Jun 2022)

Summertime Stargazing volunteer, South Bend, IN (Jun 2018)

Astronomy Star Party volunteer, South Bend, IN (Oct 2014)

E. Professional Service:

i. Professional Service Activities:

SDSS-V Local Volume Mapper Observer (2025 – Present)

ii. Meetings/Workshop/Conference Organization:

Escape of Lyman Radiation from Galactic Labyrinths session chair (April 8-11, 2025)

CGM@ND local organizing committee member (September 3-15, 2023)

CGM@ND session chair (September 3-15, 2023)

UV Galaxies 2023 session chair (July 3-7, 2023)

Galaxy Evolution Workshop discussion section lead (January 13, 2022)

iii. Membership in Professional Organizations:

International Astronomical Union (2025-Present)

Sloan Digital Sky Survey V (2024–Present)

American Astronomical Society (2019-Present)

Graduate Physics Society (2014-2022)

Sloan Digital Sky Survey IV (2014–2020)

ΣΠΣ National Physics Honor Society (Inducted 2013)

ΦΚΦ National Honor Society (Inducted 2012)

ΦΗΣ Freshman National Honor Society (Inducted 2011)

F. Academic Advising Activities:

I am currently not responsible for advising astronomy and physics undergraduate majors.

G. Research Experience for Undergraduates (REU) Program (2024–2025):

i. Program Description:

The Research Experiences for Undergraduates (REU) site at Texas Christian University NSF-site grant provides seven NSF-funded and one Provost-funded undergraduate students each summer the opportunity to participate in research on topics in atomic, molecular, bio, chemical, and statistical physics, as well as astronomy and planetary science. In addition to participating in research with an experienced mentor, the REU students will engage in weekly activities to ensure not only that their research stays on track but that they have an engaging collegial and scholarly experience. By the end of the 10-week summer program, every student will have given a formal presentation about their work and prepare a conference poster.

The TCU REU site has a strong plan to recruit undergraduate students from groups underrepresented in physics and astronomy and has at its goal to recruit students from non-research focused institutions. The project plans to be informed by both short term and long term evaluations and is guided by an advisory committee.

ii. REU Students Directly Supervised (Summer 10-weeks):

a. Texas Christian University

2025: Darnell (DeAndre) Walker (Sam Houston State University, TX)
Genesis Torres (College of the Sequois, CA)

b. University of Texas at Austin

2024: Savannah Solis (San Fransico State University, CA)

iii. Other REU Service:

McDonald Observatory Trip Chaperone (2025)

H. Other Service:

i. Graduate Student Research Supervision:

a. Current:

Grad. Student (Pre-PhD): Andrew Tom (Fall 2024–present)

b. Former:

Grad. Student (Pre-PhD):	Sebastian Muscarnero-Fanelli	(Fall 2024–Summer 2025)
PhD Candidate:	Ananya Tuli	(UND, 2021–2025)
PhD Candidate:	Sarah Healy	(VT, 2023–2024)
PhD Candidate:	Florence de Almeida	(Univ. Diego Portalies, 2023–2024)
PhD Candidate:	Malia Kao	(UT, 2021–2023)

ii. Undergraduate Research: Independent Study and Junior/Senior Thesis:

a. Current:

Ahabar Hossain (Spring 2025–Present; Junior/Senior Honors Project)

b. Former:

Jacob Oliver	(Spring 2025; Independent Study)
Savannah Solis	(SFSU, Fall 2024–Spring 2025; Senior Thesis)
Ian Wolter	(UT, Summer 2023; TAURUS program)

iii. Research Apprentices Program:

a. Current:

Rakshith Karthik (Fall 2025–Present)

b. Former:

Reese Cotton (Fall 2024–Spring 2025)

iv. Community and Belonging:

Finding Ourselves in Community workshops graduate (Spring 2025)

Mitigating Unconscious Bias workshop (Feb 2025)

Anti-racist webinars attendee (2024–2025)

Astronomy's Poverty Problem working group (2023-2024)

Affirming LGBTQIA+ People: Interpersonal Allyship workshop attendee (2021)

Equity and Inclusion Discussion Group member (2021–2024)

Graduate Certificate in Community Engagement and Public Scholarship (2021)

greeNDot Bystander Training (2021)

Building an Antriracist Vocabulary Lecture Series attendee (2020–2022)

Inter-University Anti-racist Reading Group member (2020–2021)

7. References:

Dr. John Chisholm
University of Texas at Austin
Assistant Professor, Astronomy
Postdoctoral Fellow Research Advisor
chisholm@austin.utexas.edu

Dr. J. Christopher Howk
University of Notre Dame
Professor, Physics
Graduate Research Advisor
jhowk@nd.edu
574-631-8594

Dr. Nicolas Lehner
University of Notre Dame
Research Professor, Physics
Graduate Research Co-Advisor
nlehner@nd.edu
574-631-5755

Dr. Danielle Berg
University of Texas at Austin
Assistant Professor, Astronomy
Collaborator
daberg@austin.utexas.edu