

NATALIE MYERS

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Degrees:

- — Ph.D. Physics – Astrophysics Track, Texas Christian Univ. (TCU), TX (expected 2025)
Dec 2022 M.S. Physics – Astrophysics Track, Texas Christian Univ. (TCU), TX.
May 2020 B.S. Physics, Univ. of St. Thomas (UST), MN (Minor: Math)
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Employment and Affiliation:

- 2021–Present Research Assistant, Texas Christian University, Advisor: P. M. Frinchaboy
2020–Present Teaching Assistant, Texas Christian University
2019–2020 Physics Tutor, University of St. Thomas
— *Including Classical and Modern Physics I & II*
2018–2020 Observatory Crew, University of St. Thomas
— *Trained on 0.4-m telescope hardware and software*
— *Gave tours for star parties and other community outreach events*
— *Trained introductory astronomy students to operate UST 0.4-m telescope*
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Awards and Fellowships:

- 2024 Sigma Xi Grant in Aid of Research (\$2,765)
2024 Graduate Travel Grant, TCU (\$400)
2023 AAS 241 Chambliss Astronomy Achievement Award Winner
2020–2021 Ida Green Fellowship, TCU (\$56,010)
2019–2020 MN Space Grant Consortium Award for Significant Contributions to Research (\$500)
2019 Young Scholars Research Grant, Advisor: M. Wood

Telescope Proposals & Observing Experience:

- 2024B McDonald 2.7-m/Coudé (Co-I; 3 nights – awarded)
2024A Keck 10-m/HIRES (Co-I; 9 half nights – awarded))
2023C McDonald 2.7-m/Coudé (PI ; 6 nights – awarded)
2023C McDonald 2.7-m/Coudé (PI ; 6 nights – awarded)
2023B Magellan 6.5-m/MIKE (Co-I; 2 nights – awarded)
2023B Lick 2.4-m/APF (Co-I; 7 nights – awarded, queue scheduled)
2023B Lick 3.0-m/Hamilton echelle (Co-I; 3 nights – awarded)
2023B Keck 10-m/HIRES (Co-I; 1 night – awarded)
2023B McDonald 2.7-m/Coudé (Co-I; 4 nights – awarded)
2023A Magellan 6.5-m/MIKE (Co-I; 2 nights – awarded)
2022B McDonald 2.7-m/Coudé (Co-I; 4 nights – awarded)
2022A Magellan 6.5-m/MIKE (Co-I; 2 nights – awarded)
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Teaching Experience - Teaching Assistant (TCU)

2024 Spring	PHYS 10164:	Classical Physics 2 Lab	(3 sections)
2021 Summer	PHYS 10164:	Classical Physics 2 Lab	(1 section)
2021 Spring	PHYS 10263:	Cosmic Origins Lab	(2 sections)
2020 Fall	PHYS 10273:	Intro to Astronomy: Earth & Planets Lab	(2 sections)

Teaching Experience - Other

2023	Covered a lecture in PHYS 10273 (Intro to Astronomy)
2023	Mentored REU student H. Wallace – <i>Supervised a research project determining open cluster membership for SDSS-V data</i>
2022	Co-Mentored REU student K. Thomas – <i>Assisted in mentorship and teaching research methods</i>
2018–2019	Trained introductory astronomy students to operate UST 0.4-m telescope (4 semesters)

Research Projects:

- Open Cluster Chemical Abundances and Mapping Survey (TCU & SDSS-IV; 2020–Present):
 - Utilized *Gaia EDR3* and proprietary SDSS-IV/APOGEE DR17 data to ascertain membership probabilities for open cluster stars
 - Created an openly available value added catalog (*DR17 OCCAM VAC*) including:
 - 153 open clusters with APOGEE abundances for 15+ elements
 - 2061 total stellar members for the 153 open clusters
 - Utilized this sample to constrain the evolution of the abundance gradients for 15 elements including elements in the alpha, iron-peak, and odd-z groups
- Open Cluster Optical Follow-up (TCU & SDSS-IV; 2022–Present):
 - Derived neutron-capture abundances for known open cluster members in the OCCAM survey
 - Utilized professional observatories to collect data, including:
 - Keck, Magellan, McDonald, and Lick Observatories
 - Learned standard data reduction and analysis techniques for echelle spectroscopy using:
 - (IRAF) Image Reduction and Analysis Facility
 - (BACCHUS) Brussels Automatic Code for Characterizing High-accuracy Spectra
- Globular Cluster Membership (TCU & SDSS-IV; 2022–Present):
 - Determined globular cluster membership by modifying the OCCAM analysis pipeline
 - Explored their orbits to identify any correlations between types of orbits and chemistry
- Spectroscopic Instrumentation (UST; 2019–2020):
 - Calibrated an optical spectrometer for the Univ. of St. Thomas observatory
 - Used the spectrometer and line-depth ratios to derive the temperature of Arcturus

Other Professional Experience

- Graduate Student Representative at TCU (2023-2024)
- CUWiP Conference Local Organizing Committee (LOC) member and volunteer, (Jan 2023 at TCU)
- Volunteering for Atatiana Projects 2023 STEAM summer camp (July 2023)

NATALIE MYERS – PUBLICATIONS

Refereed Publications

Schiavon, R., Phillips, S., **Myers, N.**, Horta, D., Minniti, D., Allende Prieto, C., Anguiano, B., Beaton, R., Beers, T., Brownstein, J., Cohen, R., Fernández-Trincado, J., Frinchaboy, P., Jönsson, H., Kisku, S., Lane, R., Majewski, S., Mason, A., Mészáros, S., & Stringfellow, G., 2023, “*The APOGEE Value Added Catalogue of Galactic Globular Cluster Stars*”, MNRAS, [arXiv:2310.07764], doi: 10.1093/mnras/stad3020

SDSS Collaboration, Almeida, A., **et al.**; including **Myers, N.**, (155 authors; alphabetical order), 2023, “*The Eighteenth Data Release of the Sloan Digital Sky Surveys: Targeting and First Spectra from SDSS-V*”, ApJS, 267, 44, doi: 10.3847/1538-4365/acda98

Myers, N., Donor, J., Spoo, T., Frinchaboy, P. M., Cunha, K., Price-Whelan, A. M., Majewski, S. R., Beaton, R. L., Zasowski, G., O’Connell, J., Ray, A. E., Bizyaev, D., Chiappini, C., García-Hernández, D. A., Geisler, D., Jönsson, H., Lane, R. R., Longa-Peña, P., Minchev, I., Minniti, D., Nitschelm, C., & Roman-Lopes, A., 2022, “*The Open Cluster Chemical Abundances and Mapping Survey. VI. Galactic Chemical Gradient Analysis from APOGEE DR17*”, AJ, 164, 85. doi: 10.3847/1538-3881/ac7ce5

Spoo, T., Tayar, J., Frinchaboy, P. M., Cunha, K., **Myers, N.**, Donor, J., Majewski, S. R., Bizyaev, D., García-Hernández, D. A., Jönsson, H., Lane, R. R., Pan, K., Longa-Peña, P., & Roman-Lopes, A., 2022, “*The Open Cluster Chemical Abundances and Mapping Survey. VII. APOGEE DR17 [C/N]-Age Calibration*”, AJ, 163, 229. doi: 10.3847/1538-3881/ac5d53

SDSS Collaboration, Abdurro’uf, **et al.**; including **Myers, N.**, (341 authors; alphabetical order), 2022, “*The Seventeenth Data Release of the Sloan Digital Sky Surveys: Complete Release of MaNGA, MaStar, and APOGEE-2 Data*”, ApJS, 259, 35. doi: 10.3847/1538-4365/ac4414

Poster Presentations

Myers, N., Reggiani, H., Loebman, S., Holmbeck, E., Shetrone, M., Frinchaboy, P., The OCCAM Team, “*Surveying for Ancient Supernovae Across the Galaxy: Mapping SDSS-IV/OCCAM Abundances and the Search for Heavier Elements*”, AAS, #243, 458.07, New Orleans, LA, January 2024.

Myers, N., Frinchaboy, P., Donor, J., Spoo, T., Otto, J., Wiggins, A., Loebman, S., Tayar, J., Zasowski, G., Cunha, K., Price-Whelan, A., Majewski, S., Sinha, A., Reggiani, H., Holmbeck, E., Beaton, R., O’Connell, J., Ray, A., “*Mapping Chemical Abundances Across the Milky Way with Open Clusters in SDSS/APOGEE: Gradients of Iron and Light Elements plus Neutron Capture Follow-Up*”, Surveying the Milky Way: The Universe in Our Own Backyard, Pasadena CA, October, 2023.

Myers, N., Frinchaboy, P., Spoo, T., Wiggins, A., Otto, J., Donor, J., Zasowski, G., Sinha, A., Cunha, K., Reggiani, H., Holmbeck, E., Loebman, S., Tayar, J., “*The Open Cluster Chemical Abundances and Mapping Survey Follow-up: Tracing the Neutron-Capture Enrichment of the Milky Way*”, SDSS-V Meeting NYC, August 2023.

Myers, N., ”Painting a Portrait of a Young Milky Way using Globular Clusters”, Student Research Symposium at TCU, April 2023.

Myers, N., Frinchaboy, P., Donor, J., & Spoo, T., “*Exploring the Milky Way’s Childhood: Globular Clusters Abundances from SDSS/APOGEE*”, AAS #241, 402.14., Seattle, WA, January 2023.

Myers, N., Frinchaboy, P., Donor, J., Cunha, K., Spoo, T., Price-Whelan, A., Majewski, S., Beaton, R., Zasowski, G., O’Connell, J., & Ray, A., “*OCCAM VI: Assembling the open cluster ‘Avengers’ of Galactic Evolution*”, AAS #240, 201.04., Pasadena, CA, June 2022.

Myers, N., “Assembling the Open Cluster ‘Avengers’ of Galactic Evolution”, Student Research Symposium at TCU, April 2022.

Myers, N., Frinchaboy, P., Donor, J., Cunha, K., Spoo, T., Price-Whelan, A., Majewski, S., Beaton, R., Zasowski, G., O’Connell, J., & Ray, A., “*OCCAM VI: Assembling the open cluster ‘Avengers’ of Galactic Evolution*”, AAS #239, Salt Lake City, UT, January 2022.

(Cancelled due to COVID-19)

Myers, N. & Wood, M., “*Calibrating a New Spectrometer Using Arcturus*”, AAS # 238, 547.18., attended virtually, January 2021.

Other Poster Presentations I Have Contributed To

Wiggins, A. I., Bhattacharai, B., Loebman, S., **Myers, N.**, Frinchaboy, P., Otto, J., Spoo, T., & Donor, J., “*Only the Special Survive: Star Cluster Disruption in Milky Way-like Galaxy Simulations*”, AAS, #243, 458.20., 2024

Wallace, H., **Myers, N.**, Otto, J., Donor, J., Spoo, T., Wiggins, A., & Frinchaboy, P., “*The Open Cluster Chemical Abundances and Mapping (OCCAM) Survey: First Results from SDSS-V*”, AAS, #243, 458.02, 2024

Otto, J., Spoo, T., Toguchi-Tani, E., Tayar, J., Frinchaboy, P., & The OCCAM Team (Including **Myers, N.**), “*Digging through the Galactic Graveyard: Chemistry and Ages of “Dead” Milky Way Satellite Galaxies*”, AAS, #243, 107.05, 2024

Wiggins, A. I., Bhattacharai, B., **Myers, N.**, Loebman, S., Frinchaboy, P., Otto, J., Spoo, T., & Donor, J., “*Only the Special Survive: Star Cluster Disruption in Galaxy Simulations*”, Surveying the Milky Way: The Universe in Our Own Backyard, Pasadena CA, Oct, 2023

Wiggins, A. I., Bhattacharai, B., **Myers, N.**, Loebman, S., Frinchaboy, P., Otto, J., Spoo, T., & Donor, J., “*Only the Special Survive: Star Cluster Disruption in Galaxy Simulations*”, New York City NY, Aug, 2023

Otto, J., Wallace, H., Frinchaboy, P., **Myers, N.**, Spoo, T., Wiggins, A. I., Donor, J., Zasowski, G., Sinha, A., Cunha, K., Loebman, S., & Tayar, J., “*The Open Cluster Chemical Abundance and Mapping (OCCAM) survey: Cross-calibration of APOGEE to MWM/ASTRA*”, New York City NY, Aug, 2023

Thomas, K., Spoo, T., Frinchaboy, P., **Myers, N.**, Shetrone, M., & Tayar, J., 2023, “*Metal through the Eons: Calibrating Chemical Clocks to Probe the Early History of the Milky Way*”, AAS, #241, 402.33.

Spoo, T., Frinchaboy, P., Souto, D., Cunha, K., & **Myers, N.**, 2023, “*How buoyant is your element? Atomic Diffusion of stars in Ruprecht 147 and NGC 752*”, AASMeeting Abstracts, #241, 402.09.

Spoo, T., Tayar, J., Frinchaboy, P., Cunha, K., **Myers, N.**, Donor, J., & Majewski, S., 2022, “*Tik Tok on the Chemical Clocks!: Calibrating [C/N] abundance ratios using star clusters to determine stellar ages*”, AAS, 54, 201.05.

Other Conferences Attended

- 2023 Conference for Undergraduate Women in Physics at Texas Christian Univ., Fort Worth, TX.
 - 2020 Conference for Undergraduate Women in Physics at Univ. of Minnesota, St. Paul, MN.
 - 2019 Conference for Undergraduate Women in Physics at Northwestern Univ., Chicago, IL.
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