Benjamin J. Gibson

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Research Experience

Resolving the Global Stellar Populations and Star Formation History of the Starburst Galaxy M82 2025 - Present
Space Telescope Science Institute

- Performed star-by-star SED fitting to deep resolved photometry of M82 from *JWST* as part of the *Cibola* treasury survey.
- Will produce high-resolution maps of extinction and stellar populations, leading to fully resolved star formation histories across the bulge, disk, and halo.

Tackling the Mysteries of the Bizarre ISM in Blue And Dusty Gas Rich sources - 'BADGRs' - Using Extinction Mapping 2025 - Present
Space Telescope Science Institute

- Performed star-by-star SED fitting to deep panchromatic photometry of NGC4449 and NGC7793 from *HST* and *JWST*.
- Created maps of stellar types, metallicity, and dust extinction to help determine how these incredibly dusty galaxies can be so UV-bright.

The APOGEE Survey: High-resolution IR integrated-light spectroscopy of M33 Cluster System 2023 - 2026
University of Utah

- Analyzed APOGEE spectra of star clusters in M33. Measured kinematics, metallicities, and α abundances to gain insight on the clusters' origins and the assembly history of M33.
- Used visual, spectroscopic, and photometric techniques to identify and classify clusters.

The Chemodynamics of the Stellar Populations in M31 from APOGEE Integrated Light Spectroscopy 2019 - 2025
University of Utah

- Analyzed near-infrared integrated light spectra of the inner $\sim$7 kpc of M31 from APOGEE.
- Reduced data to optimize for integrated light and spatially binned to increase SNR.
- Used machine learning to interpolate between simple stellar population model spectra.
- Developed new software to perform full spectrum fitting.

Education

PhD in Physics, Astrophysics Track 2021 - 2025
University of Utah, Salt Lake City, UT.
Advised by **Dr. Gail Zasowski** and **Dr. Anil Seth**

MS in Physics 2019 - 2021
University of Utah, Salt Lake City, UT.

BS in Physics, Minor in Mathematics 2015 - 2019
Florida State University, Tallahassee, FL.

Fellowships and Awards

Outstanding Graduate Student Award - $1000 2025
University of Utah - *Department of Physics and Astronomy*

Eccles Astronomy Research Award - $5000 2023
University of Utah - *Department of Physics and Astronomy*

Swigart Graduate Research Fellowship - $6000 2020
University of Utah - *Department of Physics and Astronomy*

Outstanding Graduate Student Award - $400 2020
University of Utah - *Department of Physics and Astronomy*

Eagle Scout Rank 2014
Boy Scouts of America, Mecklenburg County Council

First Author Publications

Gibson, Benjamin J. et al., 2026 *accepted*, *Probing the Assembly of Triangulum: Precision Metallicities and α Abundances of M33's Star Clusters from APOGEE Integrated-Light Spectroscopy*, ApJ (arXiv:2610.26565)

Gibson, Benjamin J.; Zasowski, Gail; Seth, Anil; ...; et al., 2025, *Towards Understanding the Milky Way's Typicality: Assessing the Chemodynamics of M31's Bulge & Bar, Thick & Thin discs*, MNRAS, 542, 19 (arXiv:2410.23340)

Gibson, Benjamin J.; Zasowski, Gail; Seth, Anil; ...; et al., 2023, *The Chemodynamics of the Stellar Populations in M31 from APOGEE Integrated Light Spectroscopy*, Astrophysical Journal, 952, 23 (arXiv:2304.09901)

Other Publications

Smercina, Adam; ...; **Gibson, Benjamin J.**; ..., 2026 *submitted*, *A Portrait of the Triangulum: JWST NIRCam Provides a New View on the Center of M33*, ApJ

Alondra Álvarez-Castro, **Benjamin J. Gibson**, and Gail Zasowski, 2024, *Measuring the Chemodynamics and Ages of the M32 and M110 Dwarf Galaxies with APOGEE*, Research Notes of the AAS, 8, 112

Wainer, Tobin M.; Zasowski, Gail; ...; **Gibson, Benjamin J.**; et al., 2023, *Catalog of Integrated-light Star Cluster Light Curves in TESS*, Astronomical Journal, 166, 106 (arXiv:2307.09510)

Abdurro'uf; ...; **Gibson, Benjamin J.**; ...; et al., 2022, *The Seventeenth Data Release of the Sloan Digital Sky Surveys: Complete Release of MaNGA, MaStar, and APOGEE-2 Data*, Astrophys J Suppl Ser, 259, 35 (arXiv:2112.02026)

Invited Talks

- ***What the Dust?: Mapping the ISM of Three Bizarre Local Volume Galaxies***

Tufts Astronomy and Astrophysics Seminar 2026
Tufts University, Medford, MA

- ***Bridging the Divide: Studying the Resolved and Integrated Light of Nearby Galaxies in High Resolution***

Konigstuhl Colloquium 2026
Max Planck Institute for Astrophysics, Heidelberg, Germany

STScI Cool Sci Series 2026
Space Telescope Science Institute, Baltimore, MD

- ***Bizarre BADGRs: Unravelling the Mysterious ISM of Blue And Dusty Gas Rich Sources***

STScI Hot Sci Series 2026
Space Telescope Science Institute, Baltimore, MD

- ***Studying Nearby Galaxy Evolution with APOGEE Integrated Light Spectra***

Meldrum Science Center Speaker Series 2025
Westminster University, Salt Lake City, UT

- ***Harnessing the Power of High-Resolution Integrated Light Spectroscopy from APOGEE***

Carnegie Observatories Lunch Seminar 2025
Carnegie Observatories, Pasadena, CA

Tuesday UVa / NRAO Astronomy (TUNA) Lunch Talks 2024
University of Virginia, Charlottesville, VA

Galaxies/AGN Journal Club 2024
Space Telescope Science Institute, Baltimore, MD

Other Talks

- ***Harnessing the Power of High-Resolution Integrated Light Spectroscopy from APOGEE***

APOGEE's Galactic Odyssey - Contributed Talk 2026
CEFCA, Teruel, Aragon, Spain

245th AAS Meeting - Dissertation Talk 2025
National Harbor, MD

- ***Characterizing Kinematically Distinct Stellar Populations in M31 from Integrated Light Spectroscopy***

SDSS-V Collaboration Meeting - Contributed Talk 2024
New Mexico State University, Las Cruces, NM

A Life Devoted to Stellar Populations - Contributed Talk 2023
Puerto de la Cruz, Tenerife, Spain

- ***The Chemodynamics of the Stellar Populations in M31***

SDSS Milky Way As a Galaxy Telecon - Research Update 2023

Annual Physics & Astronomy Research Symposium 2023
University of Utah, Salt Lake City, UT

- ***Untangling the Chemodynamics of the Stellar Populations in M31***

Linking the Galactic and Extragalactic - Contributed Talk 2022
Wollongong, NSW, Australia

AAS 240 Summer Meeting - Contributed Talk 2022
Pasadena, CA

Annual Physics & Astronomy Research Symposium 2022
University of Utah, Salt Lake City, UT

- ***Chemodynamics from Integrated Light Spectroscopy***
  The SDSS Collaboration Meeting 2021 - Lightning Talk 2021
  Hosted by Johns Hopkins University, Baltimore, MD

- ***An Infrared Mapping of the Interior of M31***
  Annual Physics & Astronomy Research Symposium 2021
  University of Utah, Salt Lake City, UT
  Swigart Summer Research Symposium 2020
  University of Utah, Salt Lake City, UT

Outreach Presentations

- ***Studying Nearby Galaxies in High Resolution***
  Von Braun Astronomical Society Monthly Meeting 2026

- ***What does the Night Sky Really Look Like?***
  Highland High School Astronomy Club 2022
  Astronomy on Tap Salt Lake City 2022
  Our Saviours Lutheran Church Senior Luncheon 2022

Teaching and Mentoring Experience

REU Mentor 2023
University of Utah - *Department of Physics and Astronomy*
- Instructed an undergraduate student from Puerto Rico in recreating my APOGEE integrated light spectral analysis code. Applied it to spectra of the center of M32 and M110 and interpreted it within the context of published literature. Project resulted in a poster presented at AAS #243, Jan. 2024 and a AAS Research Note, Apr. 2024

Graduate Teaching Assistant Aug. 2019 - Dec. 2020
University of Utah - *Department of Physics and Astronomy*
- **Fall 2020:** Observational Astronomy, Physics II Lab for Scientists and Engineers
- **Spring 2020:** General Physics II
- **Fall 2019:** Observational Astronomy, The Solar System

Service

Galaxies/AGN Journal Club Organizing Committee 2026-Present
Space Telescope Science Institute

PhA Mentorship Program, Mentor 2026-Present
Johns Hopkins University Department of Physics and Astronomy

Graduate and Professional Student Council, Historian 2023 - 2025
University of Utah Graduate School

Graduate Student Advisory Committee 2020 - 2025
Graduate Student Advisory Committee, Chair & Chair-Elect 2022 - 2024
Physics Graduate Social Committee, Chair 2020 - 2022
Physics Graduate Social Committee 2019 - 2024
Recruitment and Admissions Committee 2021 - 2022
Physics Graduate Peer Mentor Program, Mentor 2020 - 2024
University of Utah Department of Physics and Astronomy

Professional Memberships

American Astronomical Society 2021 - Present
Sloan Digital Sky Survey IV & V 2020 - Present