

DR. JULIE IMIG | CURRICULUM VITAE

»»» SUMMARY



I am an Astronomical Data Scientist at the Space Telescope Science Institute in Baltimore, Maryland. I received my doctorate degree in Astronomy from New Mexico State University in 2023. My research specializes in uncovering the formation and evolution history of the Milky Way Galaxy using large astronomical surveys.

»»» CURRENT POSITION

2023 - now **Astronomical Data Scientist** Space Telescope Science Institute

- » Working at the Mikulski Archive for Space Telescopes (MAST) archiving astronomical data and sustaining database infrastructure in support of missions including SDSS, TESS, HST, JWST, and Roman.
- » Lead developer for the SDSS Legacy Archive at MAST, adding 50 TB of SDSS data into the MAST archive. (<https://archive.stsci.edu/sdss>)

»»» EDUCATION

2017 - 2023 **Doctorate of Philosophy, Astronomy** New Mexico State University

- » Thesis: A Galactic Self-Portrait: chemical cartography, density modeling, and integrated properties of the Milky Way
- » Advisor: Dr. Jon Holtzman
- » Graduation: May 2023 | GPA: 3.625/4.0

2013 - 2017 **Bachelor's Degree, Physics** University of Utah

- » Emphasis: Astrophysics | GPA: 3.731/4.0
- » Thesis: Galactic evolution of phosphorus and sulfur using star clusters

»»» FIRST AUTHOR PUBLICATIONS

Imig et al. 2025
ApJ, 990, 203 **» A Galactic Self-Portrait: Density Structure and Integrated Properties of the Milky Way Disk**
<https://doi.org/10.3847/1538-4357/adf723>

Imig et al. 2023
ApJ, 954, 124 **» A Tale of Two Disks: Mapping the Milky Way with the final data release of APOGEE**
<https://doi.org/10.3847/1538-4357/ace9b8>

Imig et al. 2022
AJ, 163, 56 **» SDSS-IV MaStar: Data-driven Parameter Derivation for the MaStar Stellar Library**
<https://doi.org/10.3847/1538-3881/ac3ca7>

DR. JULIE IMIG | PUBLICATIONS

SELECTED CO-AUTHOR PUBLICATIONS

Zasowski et al. 2025
ApJ, 991, 36

► **Watching our Galaxy Grow Up: The Mass and Color Evolution of the Milky Way**
<https://doi.org/10.3847/1538-4357/ade53>

Stone-Martinez et al. 2025
AJ, 170, 66

► **StarFlow: Leveraging Normalizing Flows for Stellar Age Estimation in SDSS-V DR19**
<https://doi.org/10.3847/1538-3881/addd18>

Lian et al. 2024
Nature Astronomy, 8,
1302-1309

► **The broken-exponential radial structure and larger size of the Milky Way galaxy**
<https://doi.org/10.1038/s41550-024-02315-7>

Stone-Martinez et al. 2024
AJ, 167, 73

► **Parameter based stellar distances and masses using simple neural nets**
<https://doi.org/10.3847/1538-3881/ad12a6>

Gibson et al. 2023
ApJ, 952 23

► **The Chemodynamics of the Stellar Populations in M31 from APOGEE Integrated Light Spectroscopy**
<https://doi.org/10.3847/1538-4357/acd9a9>

Hill et al. 2022
MNRAS, 517,3

► **SDSS-IV MaStar: $[\alpha/\text{Fe}]$ for the MaNGA Stellar Library from Synthetic Model Spectra**
<https://doi.org/10.1093/mnras/stac2992>

Lazarz et al. 2022
A&A, 668, A21

► **SDSS-IV MaStar: Stellar Parameter Determination With Continuum-Supplemented Full-Spectrum Fitting**
<https://doi.org/10.1051/0004-6361/202243701>

Lian et al. 2022
MNRAS, 513,3

► **The Milky Way tomography with APOGEE: density distribution and structure of mono-abundance populations**
<https://doi.org/10.1093/mnras/stac1151>

Hill et al. 2021
MNRAS, 509, 3

► **SDSS-IV MaStar: Theoretical Atmospheric Parameters for the MaNGA Stellar Library**
<https://doi.org/10.1093/mnras/stab3263>

Yan et al. 2019
ApJ, 883, 175

► **SDSS-IV MaStar — A Large, Comprehensive, and Homogeneous Stellar Spectral Library**
<https://doi.org/10.3847/1538-4357/ab3ebc>

Placco et al. 2015
ApJ, 812, 109

► **Hubble Space Telescope near-ultraviolet spectroscopy of bright CEMP-s stars**
<https://doi.org/10.1088/0004-637X/812/2/109>

ALL PUBLICATIONS

A complete list of my publications is available on ADS:

http://adsabs.harvard.edu/cgi-bin/nph-abs_connect?return_req=no_params&author=Imig,%20Julie

WORK EXPERIENCE

CURRENT POSITION

2023 - now **Astronomical Data Scientist** Space Telescope Science Institute

» Working at the Mikulski Archive for Space Telescopes (MAST) archiving astronomical data and sustaining database infrastructure in support of missions including SDSS, TESS, JWST, and HST.

RESEARCH EXPERIENCE

2017 - 2023 **Graduate Research Assistant** New Mexico State University

» Working with Dr. Jon Holtzman on the formation and evolution of the Milky Way through its stellar populations, APOGEE survey operations, and development of the MaNGA Stellar Library (MaStar).

2018 - 2021 **APOGEE Data Reduction Specialist** Sloan Digital Sky Survey

» Nightly data inspection and quality control for the APOGEE survey. Reduce data, update field completion status for survey planning and operation.

2014 - 2017 **Undergraduate Research Assistant** University of Utah

» Working with Dr. Inese Ivans in the Cosmic Origins research team. Involved in development and application of spectroscopic tools to study stellar populations and galactic evolution. SCHOLARSHIPS/STIPENDS: ACCESS; UROP, REU.

2016 - 2016 **Space Astronomy Summer Program** Space Telescope Science Institute

» Working with Dr. Rachel Osten to develop and maintain Space Telescope Live: an accessible social media account that acts as an effective live feed for what the Hubble Space Telescope is observing in real-time. <https://spacetelescopelive.org/latest>
<https://twitter.com/spacetelelive>

2013 - 2014 **ACCESS Program for Women in Science** University of Utah

» Program designed to expose undergraduate women to professional laboratory environments from all fields of science. Investigated topics include Brownian motion, cosmic rays, cryptography, biological cloning, organic chemistry, protein denaturation, and topology.

LEADERSHIP EXPERIENCE

2022 - 2024 **Milky Way as a Galaxy Working Group Co-Chair** Sloan Digital Sky Survey

2023 **NASA FAIR Data Workshop Organizing Committee** NASA Science Mission Directorate

2019 - 2021 **Inclusive Astronomy Meeting Coordinator** New Mexico State University

2019 - 2020 **Astronomy Graduate Student Organization President** New Mexico State University

TEACHING & MENTORSHIP EXPERIENCE

2025 **Mentor for the Space Astronomy Summer Program Internship** Space Telescope Science Institute

» I served as a mentor for the Space Astronomy Summer Program at STScI, an internship program pairing undergraduate students with technical staff. My intern created three new Jupyter notebook tutorials for the SDSS Legacy Archive at MAST: https://spacetelescope.github.io/mast_notebooks/notebooks/SDSS/sdss.html

2017 - 2019 **Teaching Assistant** New Mexico State University

» **ASTR 110: Introduction to Astronomy.** Responsible for teaching the interactive laboratory sessions and making myself available as tutor and resource for introductory-level astronomy. Instructors: Dr. Anatoly Klypin (Fall 2017, Spring 2019) and Dr. Jason Jackiewicz (Spring 2018, Fall 2018)

2020 - 2023 **Undergraduate Student Mentoring** New Mexico State University

» **FRIENDS Mentoring Program:** Astronomy Department internal program that pairs up graduate students with undergraduates going for an Astronomy Minor, to provide mentorship, help with applications for graduate programs and summer internships, and encourage participation in department activities. I was a Mentor in the FRIENDS program from 2020-2022.

» **Research Group Mentoring:** Assisted in mentoring undergraduate students in our research group with Jon Holtzman, meeting weekly, helping with research, teaching PYTHON, and co-authoring papers.

2017 - 2023 **Outreach & Science Communication** New Mexico State University

» Volunteered at public outreach events representing NMSU operating telescopes, showcasing meteorites, and other hands-on activities. **Selected Events:** New Mexico Space Festival, El Paso Space Festival, NMSU Astronomy Telescope Open House, New Mexico Pride Festival, Eclipse Viewings, Astronomy on Tap.

» **Resource Development:** In 2019, involved in a small committee tasked with developing new outreach materials for the Astronomy Department. Gathering Supplies, writing instructions for volunteer training, 3D printing space-related models and telescope parts.

» **Letters to Pre-Scientist:** National pen-pal program pairing 5th to 10th grade students from low income communities with real scientists, designed to expose more students to STEM fields and demystify STEM careers. I participated during the 2020-2021 school year.

INVITED TALKS & CONFERENCES

INVITED & PLENARY TALKS

2025/06/02	The SDSS Legacy Archive at MAST	SDSS-V Collaboration Meeting; MPIA
2023/11/02	A Tale of Two Disks: Mapping the Milky Way with the Final Data Release of APOGEE	Leibniz-Institut für Astrophysik Potsdam (AIP)
2023/03/03	A Galactic Self-Portrait: 3D density map and integrated properties of the Milky Way	NMSU Thesis Defense
2022/11/10	A Galactic Self-Portrait: Chemical Cartography and Density Structure of the Milky Way Disk	University of Utah HEAP Seminar

CONTRIBUTED TALKS

2025/06/06	A Galactic Self-Portrait: Density Structure and Integrated Properties of the MW Disk	SDSS-V Collaboration Meeting; MPIA
2024/06/10	The SDSS Legacy Archive at MAST	234th AAS Meeting; Madison, WI
2024/02/12	A Review of the Chemical Structure of the Milky Way	Milky Way as a Galaxy SDSS Working Group; Virtual
2024/01/08	An Outside View of the Milky Way: Density Structure and Integrated Properties of the Disk	243rd AAS Meeting; New Orleans, LA
2022/12/02	A Galactic Self-Portrait: Chemical Cartography and Density Modeling of the Milky Way Disk	Linking the Galactic and Extragalactic; Wollongong, Australia
2022/6/14	3D density modeling of the Milky Way disk	240th AAS Meeting; Pasadena, CA
2021/04/16	A Galactic Self-Portrait: 3D density map and integrated properties of the Milky Way	NMSU Thesis Proposal
2021/01/12	Data-driven parameter derivation for the MaStar library	237th AAS Meeting; Virtual
2020/06/23	Data-driven parameter derivation for the MaStar library	SDSS Collaboration Meeting; Virtual
2020/03/02	Data-driven parameter derivation for the MaStar library	SDSS-IV MaStar Busy Week; Lexington, KY
2016/08/11	Hubble Live: Developing an accessible livefeed for the Hubble Space Telescope	STScI Space Astronomy Summer Program Symposium
2015/07/28	The Milky Way's Neighbor: Chemical composition of ultra-faint dwarf galaxy Boötes I	Department of Physics Research Symposium

ADDITIONAL CONFERENCE PROCEEDINGS

»»» SELECTED CONFERENCE PROCEEDINGS (POSTER)

2022/11/28	A Galactic Self-Portrait: Chemical Cartography and Density Modeling of the Milky Way Disk	Linking the Galactic and Extragalactic, Wollongong, Australia
2022/06/16	Mapping the Milky Way with the final data release of APOGEE	240th AAS Meeting; Pasadena, CA
2021/08/12	3D density modeling of the Galactic Disk using APOGEE (Lightning Talk)	SDSS Collaboration Meeting; Virtual
2019/10/14	Recent Initiatives to Promote Diversity, Equity, and Inclusion in the NMSU Astronomy Department	Inclusive Astronomy 2 Conference; Baltimore, MD
2019/04/01	Integrated Spectrum of the Solar Neighborhood	MaNGA Collaboration Meeting; Oxford, England
2017/04/04	Galactic evolution of phosphorus and sulfur using star clusters	Undergraduate Research Symposium; Salt Lake City, UT
2016/11/12	Galactic evolution of phosphorus and sulfur using star clusters	Science Day at the U.
2016/11/12	Chemical composition of ultra-faint dwarf galaxy Boötes I	Undergraduate Research Symposium
2016/02/19	Chemical composition of ultra-faint dwarf galaxy Boötes I	Utah Conference on Undergraduate Research
2016/01/26	Chemical composition of ultra-faint dwarf galaxy Boötes I	Research on Capitol Hill Event; Salt Lake City, UT
04/19/2014	Stellar Spectroscopy	ACCESS Research Symposium

FELLOWSHIPS & AWARDS

»»» FELLOWSHIPS & GRANT FUNDING

- 2024 ▶ **STScI Director's Discretionary Research Fellowship**
Grant funding for independent research projects completed by employees at STScI. I received funding for one-year salary for 20% research time.
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- 2022 ▶ **NMSU Graduate Student Success Scholarship**
Merit-based tuition fellowship awarded to graduate assistants who display excellence in forwarding the teaching or research mission of New Mexico State University.
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- 2017 ▶ **William Webber Voyager Graduate Fellowship**
Awarded to support promising incoming graduate students and provide tuition and research funding during the first two years at NMSU.

»»» AWARDS

- 2023 ▶ **NMSU College of Arts & Sciences Outstanding Graduate Award**
Nomination-based award for outstanding PhD graduates in the College of Arts & Sciences at New Mexico State University.
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- 2021 ▶ **Scott Murrell Endowed Memorial Award**
Awarded in recognition of professional development and research accomplishment as a graduate student in the Astronomy Department at NMSU.
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- 2016 ▶ **University of Utah Outstanding Undergraduate Student Researcher**
Awarded for exceptional undergraduate student research in the Honors College at University of Utah
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- 2014 ▶ **Walter W. Wada Endowed Scholarship in Physics & Astronomy**
Awarded to Physics majors nominated by faculty for active participation in research and related activities on campus.
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- 2013 ▶ **University of Utah Presidential Scholar**
Full tuition scholarship awarded to exceptionally promising incoming students.

»»» REFERENCES

- ▶ Dr. Travis Berger Space Telescope Science Institute - current manager - tberger@stsci.edu
- ▶ Dr. Jon Holtzman New Mexico State University - primary PhD advisor - holtz@nmsu.edu
- ▶ Dr. Gail Zasowski University of Utah - SDSS collaborator - gail.zasowski@gmail.com