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, JWST, and HST.

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
- 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. 2023
ApJ, in prep.

- **A Galactic Self-Portrait: Density Structure and Integrated Properties of the Milky Way Disk**
  Pre-print draft: `http://astronomy.nmsu.edu/jimig/Imig_MW_density.pdf`

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`

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Selected Co-author Publications

Stone-Martinez et al. 2023
AJ, submitted

Parameter based stellar distances and masses using simple neural nets

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: [α/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

Abdurro'uf et al. 2022
ApJS, 259, 35

The Seventeenth Data Release of the Sloan Digital Sky Surveys
https://doi.org/10.3847/1538-4365/ac4414

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

Ahumada et al. 2019
ApJS, 249, 3

The Sixteenth Data Release of the Sloan Digital Sky Surveys
https://doi.org/10.3847/1538-4365/ab929e

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

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 - now **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 Experience

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 - now **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 - now **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 Talks

3/03/2023	**A Galactic Self-Portrait: 3D density map and integrated properties of the Milky Way**	NMSU Thesis Defense
11/10/2022	**A Galactic Self-Portrait: Chemical Cartography and Density Structure of the Milky Way Disk**	University of Utah HEAP Seminar

Conference Presentations (Oral)

12/02/2022	**A Galactic Self-Portrait: Chemical Cartography and Density Modeling of the Milky Way Disk**	Linking the Galactic and Extragalactic, Wollongong, Australia
6/14/2022	**3D density modeling of the Milky Way disk**	240th AAS Meeting
4/16/2021	**A Galactic Self-Portrait: 3D density map and integrated properties of the Milky Way**	NMSU Thesis Proposal
1/12/2021	**Data-driven parameter derivation for the MaStar library**	237th AAS Meeting
6/23/2020	**Data-driven parameter derivation for the MaStar library**	SDSS Collaboration Meeting
03/02/2020	**Data-driven parameter derivation for the MaStar library**	SDSS-IV MaStar Busy Week
08/11/2016	**Hubble Live: Developing an accessible livefeed for the Hubble Space Telescope**	STScI Space Astronomy Summer Program Symposium
07/28/2015	**The Milky Way's Neighbor: Chemical composition of ultra-faint dwarf galaxy Boötes I**	Department of Physics Research Symposium

Selected Conference Presentations (Poster)

11/28/2022	**A Galactic Self-Portrait: Chemical Cartography and Density Modeling of the Milky Way Disk**	Linking the Galactic and Extragalactic, Wollongong, Australia
06/16/2022	**Mapping the Milky Way with the final data release of APOGEE**	240th AAS Meeting
08/12/2021	**3D density modeling of the Galactic Disk using APOGEE (Lightning Talk)**	SDSS Collaboration Meeting
10/14/2019	**Recent Initiatives to Promote Diversity, Equity, and Inclusion in the NMSU Astronomy Department**	Inclusive Astronomy 2 Conference
04/01/2019	**Integrated Spectrum of the Solar Neighborhood**	MaNGA Collaboration Meeting
04/04/2017	**Galactic evolution of phosphorus and sulfur using star clusters**	Undergraduate Research Symposium
01/26/2016	**Chemical composition of ultra-faint dwarf galaxy Boötes I**	Research on Capitol Hill Event

Fellowships and Awards

2023 **NMSU College of Arts & Sciences Outstanding Graduate Award**
Nomination-based award for outstanding PhD graduants in the College of Arts & Sciences at New Mexico State University.

2022 **Most Informative Poster Award**
"Most Informative Poster" Award at the Linking the Galactic and Extragalactic, Wollongong, Australia. For poster "A Galactic Self-Portrait: Chemical Cartography and Density Modeling of the Milky Way Disk"

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.

2022 **NMSU College of Arts & Sciences Graduate Student Travel Grant**
Fellowship provided to cover professional travel to conferences for graduate students from the College of Arts & Sciences at NMSU.

2021 **Scott Murrell Endowed Memorial Scholarship**
Awarded in recognition of professional development and research accomplishment as a graduate student in the Astronomy Department at NMSU.

2017 **William Webber Voyager Graduate Fellowship**
Awarded to support promising incoming graduate students and provide research funding during the first two years at NMSU.

2017 **NMSU Graduate Tuition Fellowship**
Awarded to cover full tuition for graduate students at NMSU.

2016 **University of Utah Outstanding Undergraduate Student Researcher**
Awarded for exceptional undergraduate student research in the Honors College at University of Utah

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.

2013 **University of Utah Presidential Scholar**
Full tuition scholarship awarded to exceptionally promising incoming students.

References

- Dr. Jon Holtzman — New Mexico State University - primary PhD advisor - holtz@nmsu.edu
- Dr. Gail Zasowski — University of Utah - MWAG / APOGEE collaborator - gail.zasowski@gmail.com
- Dr. Renbin Yan — Chinese University of Hong Kong - MaStar Project Scientist - yanrenbin@gmail.com
- Dr. Moire Prescott — New Mexico State University - secondary PhD advisor - mkpresco@nmsu.edu