

# Alex M. Garcia

## —Contacts—

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## —Honors and Awards—

- ◇ Virginia Space Grant Consortium Research Fellow (UVA)  
*2024-2025*
- ◇ Graduate Student Teaching Award (UF)  
*Spring 2023*
- ◇ Outstanding Master's Thesis (UF)  
*Fall 2022*
- ◇ Outstanding Research Presentation (UF)  
*Fall 2022*
- ◇ Distinguished Contributions by a Graduate Student (UF)  
*Fall 2022*
- ◇ Distinguished Service and Citizenship (UF)  
*Fall 2022*
- ◇ Tutor of the Year Finalist; Honorable Mention (UIUC)  
*Spring 2021*
- ◇ Eagle Scout, Boy Scouts of America  
*April 2015*

## —Student Mentoring—

- ◇ Laura Carnevale (UVA)  
*2024-25*
- ◇ Martin Liu (UVA)  
*2024*
- ◇ Ilem Leisher (Grinnell College)  
*2024*

## —Education—

**University of Virginia**  
*2023 – Present*

Doctorate of Philosophy in Astronomy  
Master's of Science in Astronomy

**University of Florida**  
*2021 – 2023*

Master's of Science in Astronomy

**University of Illinois**  
*2017 – 2021*

Bachelor's of Science in Engineering Physics (*Honors*)  
Bachelor's of Science in Astronomy (*Distinction*)

## —Publications—

[NASA/ADS Library]

Summary: **5** h-index, **60** total citations

**First Author: (5 total)**

5. *Metallicity Gradients are a Good Probe of Burstiness*
4. *Does the Fundamental Metallicity Relation Evolve with Redshift? II: The Evolution in Normalisation of the Mass-Metallicity Relation* [arXiv] Submitted
3. *Does the Fundamental Metallicity Relation Evolve with Redshift? I: The Correlation Between Offsets from the Mass-Metallicity Relation and Star Formation Rate* [arXiv] [MNRAS]
2. *Interplay of Stellar and Gas-Phase Metallicities: Unveiling Insights for Stellar Feedback Modeling with Illustris, IllustrisTNG, and EAGLE* [arXiv] [MNRAS]
1. *Gas-phase metallicity break radii of star-forming galaxies in IllustrisTNG* [arXiv] [MNRAS]

**Second Author: (1 total)**

1. *Star Formation Rates, Metallicities, and Stellar Masses on kpc-scales in TNG50* Submitted

**Select Co-Author Papers: (8 total)**

4. *Unveiling the Cosmic Chemistry: Revisiting the Mass-Metallicity Relation with JWST/NIRSpec at  $4 < z < 10$*  [arXiv]
3. *Extragalactic Archaeology: the chemical and accretion history of NGC 1365* Submitted
2. *The DREAMS project: DaRk mattEr and Astrophysics with Machine learning and Simulations* [arXiv]
1. *The First Quiescent Galaxies in TNG300* [arXiv] [MNRAS]

**Non-research**

2. *Hands-on Astronomy – Tenth Edition*  
UF Astronomy 1022L Lab manual [Summary]
1. *Astronomy Laboratory Exercises and eXperiments (ALEX)*  
UF Astronomy 1022L Lab software [Github] [View]

## —Research Experience—

**Graduate Researcher**  
*2021 – Present*

University of Virginia  
University of Florida  
*Paul Torrey*

**Undergraduate Researcher**  
*2020 – 2021*

University of Illinois  
*Bryan Dunne & Yue Shen*

- ◇ Zach Stevens (UVA)  
2023-24
- ◇ Caitlin O'Brien (UF REU)  
2022-24

## Service

**Host**  
Journal Club (UVA Astro)  
2024-Present

**Member**  
Dark Skies, Bright Kids Outreach  
Group (UVA Astro)  
2023-Present

**Referee**  
Monthly Notices of the Royal As-  
tronomical Society (MNRAS)  
2023-2024

**Gradaute Student Rep.**  
Committee for Diversity, Equity and  
Inclusion (UF Astro)  
2021 - 2023

## Other Work

**Planetarium Assistant**  
Kika Silva Pla Planetarium  
Gainesville, FL  
2021 - 2023

**Tutor/Lead Tutor**  
College of Engineering (UIUC)  
Urbana, IL  
2018 - 2021

## Contributed Talks & Presentations

### Conference Contributions:

- 5. The Multi-phase ISM in Galaxies – Bologna, Italy [Poster] September 2024
- 4. Connecting Simulations and Observations – Barossa, Australia June 2024
- 3. Regulating Star Formation Across Time – STScI, USA [Video] April 2024
- 2. Building Galaxies from Scratch – Vienna, Austria [Poster] February 2024
- 1. Resolving Galaxy Ecosystems – Hong Kong, China December 2023

### Invited Seminars

- 3. Cosmology Group – U. Maryland October 2024
- 2. Virginia Tech Astronomy Seminar September 2024
- 1. Australian National University Astronomy Seminar June 2024

### Other Formal Presentations:

- 6. U.S. House of Rep. Science Committee – CosmicAI (UVA) October 2024
- 5. Astrophysics Theory Group – U. Virginia September 2024
- 4. Ellison Group Meeting – U. Victoria (virtual) February 2024
- 3. Vogelsberger Group Meeting – MIT November 2023
- 2. Kewley Group Meeting – CfA Harvard-Smithsonian November 2023
- 1. Ellison Group Meeting – U. Victoria (virtual) May 2023

### Guest Lectures:

- 3. McCormick Observatory Public Night – U. Virginia July 2024
- 2. ASTR 3830 (×3) – U. Virginia Spring 2024
- 1. ASTR 5110 – U. Virginia September 2023

## Teaching

Institution		Course		Semester
Virginia	ASTR	2110	- Intro to Astrophysics	FA 24
		†1250	- Alien Worlds	SU 24
		4470	- Computational Astrophysics	SP 24
		3830	- Planetary Astronomy (+Lab)	SP 24
		1220	- Stars, Galaxies, and Universe	SP 24
		5110	- Astronomical Techniques	FA 23
Florida	AST	†1022	- Astronomy Laboratory	SP 23
		†1022	- Astronomy Laboratory	SP 22
		1002	- Discovering the Universe	FA 21
Illinois	ASTR	330	- Extraterrestrial Life	SP 21
		330	- Extraterrestrial Life	W 21
		100	- Introduction to Astronomy	FA 20
		150	- Killer Skies: Astro-Disasters	FA 20

† Primary instructor (UVA; Summer 2024 – UF; Spring 2023, 2022)