

Alex M. Garcia

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Honors and Awards

- The Million Scholarship for Excellence in Astronomy and Astrophysics: Outstanding Master's Thesis (UF)
Fall 2022
- Million Graduate Student Research Symposium Award for Outstanding Research Presentation (UF)
Fall 2022
- John Oliver Award for Distinguished Contributions to the Department by a Graduate Student (UF)
Fall 2022
- Astro Award for Distinguished Service and Citizenship (UF)
Fall 2022
- University of Illinois Tutor of the Year Honorable Mention
Spring 2021
- University of Illinois Tutor of the Year Finalist
Spring 2021
- Dean's List (UIUC):
 - ◊ College of Liberal Arts and Sciences
Fall 2020
 - ◊ Grainger College of Engineering
Spring 2018, 2019
- Access and Achievement Scholar (UIUC)
Fall 2017 - Spring 2021
- Eagle Scout, Boy Scouts of America
April 2015

Education

University of Florida Master's of Science in Astronomy
2021 – 2023

University of Illinois Bachelor's of Science in Engineering Physics (*Honors*)
2017 – 2021 Bachelor's of Science in Astronomy (*Distinction*)

Research Experience

Graduate Researcher University of Florida
2021 – Present Advisor: Paul Torrey

- Study galaxy formation and evolution through the use of high-performance computing tools analyzing state-of-the-art cosmological simulations (Illustris/IllustrisTNG)
- One first-author publication pending journal approval with a second project in the development stages
- Collaborate with an international team with individuals from several different institutions (e.g., Lars Hernquist [CfA/Harvard], Lisa Kewley [CfA/Harvard/Australia National University], Erica Nelson [U.Colorado])

Students Mentored:

- ◊ Caitlin O'Brien (REU Student) – Parameterizing Splashback Radii-Mass Relations of Galaxy Clusters with IllustrisTNG Simulations

Undergraduate Researcher University of Illinois
2020 – 2021 Advisors: Bryan Dunne & Yue Shen

- Created requests for telescope usage then obtain and processed FITS and TIF files into color images
- Reworked IDL scripts into Python and utilized FITS data to produce publication quality plots

Publications

First Author Publications:

1. *Gas-phase metallicity break radii of star-forming galaxies in IllustrisTNG*
Garcia, Torrey, Hemler, Hernquist, Kewley, Grasha, Nelson, Zovaro, Chen.
MNRAS. Accepted. [arXiv] [MNRAS]

Co-Author Publications:

3. *Gas-phase metallicity plateaus in TNG50 galaxies*
Hemler, **Garcia**, Torrey, Hernquist, Kewley, Grasha, Nelson. MNRAS. In Prep
2. *Resolving scaling relations in IllustrisTNG at $z = 0$*
Qi, Torrey, Moreno, Hemler, Hernquist, **Garcia**. MNRAS. In Prep
1. *The First Quiescent Galaxies in TNG300*
Hartley, Nelson, Suess, **Garcia**, ..., MNRAS. Submitted

Talks:

2. *Stellar Metallicities as a Star Formation History Diagnostic*
UF Graduate Symposium
October 2022
1. *Metallicity Break Radii in IllustrisTNG Galaxies*
Master's Defense
September 2022 [Video]

Committees

Committee for Diversity, Equity and Inclusion

University of Florida Astronomy
2021 - Present

Technical Skills

●●● = Fluent
●●● = Proficient
●●● = Familiar

●●● Python

●●● L^AT_EX

●●● Tikz

●●● Microsoft Office

●●● Google Workspace

●●● Bash

●●● SLURM

●●● HTML

●●● JavaScript

●●● CSS

●●● Git/Github

●●● R

Activities

Bluecoats Drum and Bugle Corps
Summer 2019, 2020, 2021

Madison Scouts Drum Corps
Summer 2017, 2018

Non-research Publications:

2. Hands-on Astronomy – Tenth Edition

- UF Astronomy 1022L Lab manual updates [\[Summary\]](#)

1. Astronomy Laboratory Exercises and eXperiments (ALEX)

- UF Astronomy 1022L Lab software [\[Github\]](#) [\[View\]](#)

Professional Experience

Teaching/Course Assistant

Gainesville, FL/Urbana, IL

| | Course | Semester |
|------------------------|--|-------------|
| University of Florida | AST 1022L - Astronomy Laboratory | Spring 2023 |
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| | AST 1002 - Discovering the Universe | Fall 2021 |
| University of Illinois | ASTR 330 - Extraterrestrial Life | Spring 2021 |
| | ASTR 330 - Extraterrestrial Life | Winter 2021 |
| | ASTR 100 - Introduction to Astronomy | Fall 2020 |
| | ASTR 150 - Killer Skies: Astro-Disasters | Fall 2020 |

- During the Spring 2022 semester, I reformatted the entire AST 1022L lab manual into LaTeX (including most of the figures in Tikz) for ease of editing and uniformity throughout the entire 160+ page manual.
- Created lab software in HTML/JS/CSS to replace outdated software for three labs (AST 1022L).
- Host observatory sessions at the campus observatory for students in the course to attend. Includes setting up an array of telescopes and fielding student questions on their assignments.
- Provide timely and constructive feedback on a variety of student assignments ranging from discussion posts to multi-page lab reports.

Planetarium Assistant

2021 – Present

Gainesville, FL

Kika Silva Pla Planetarium

- Design, develop, and present planetarium shows for K-12 classes, collegiate-level curricula, as well as the general public.
- Host several shows, including *Florida Skies*: an hour long tour of the Gainesville night sky using a Goto-CHRONOS II optical-mechanical projector.

Tutor

2018 – 2021

Urbana, IL

Center for Academic Resources in Engineering

- Guided undergraduate students towards success in various homework assignments in a number of different disciplines.
- Planned and led small group exam review sessions, including the creation of worksheets, for specific courses and presented to students in order to help them review for exams.
- Analyzed the data on traffic of incoming students and created monthly reports of attendance, tracking several different variables.