

# Mahan Mirza Khanlari

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## EDUCATION

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**University of Texas at Austin**, Austin, TX

*BS in Astronomy and Physics*

Expected Graduation: May 2024

GPA: 3.6

## RESEARCH EXPERIENCE

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**University of Texas at Austin**, Department of Astronomy

*Undergraduate Researcher*, HETDEX, May 2023 - Present

Advisor: Karl Gebhardt

- Designed a pipeline with a combination of unsupervised and supervised machine learning to automate artifact removal from the HETDEX dataset. Reduced artifact detections & false positive by  $\sim 2\%$  per data release. Used in a variety of fields of research by HETDEX members.
- Currently investigating HI density around and between LAEs at  $z \sim 1.9-3.5$  through the Lyman Alpha absorption line.

## SCHOLARSHIPS

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Summer Undergraduate Research Funding (SURF), **University of Texas at Austin**, Department of Astronomy | \$2400

John Kelley Texas Amateur Astronomers' Scholarship, **University of Texas at Austin**, Department of Astronomy | \$1500

## POSTERS & PAPERS

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- "Using Millions of Spectra to Explore HI Density Around Lyman Alpha Emitters in HETDEX", AAS 243<sup>rd</sup> Meeting, New Orleans, Louisiana, Jan 2024 – Poster
- Absorption Troughs of Lyman Alpha Emitters in HETDEX, Laurel Wiess et al. (Including **Mahan Mirza Khanlari**), Accepted to ApJ
- "Exploring HI Density up to  $\sim 1$  Mpc Around Lyman Alpha Emitters in HETDEX", Bash Symposium, University of Texas at Austin, Oct 2023 – Poster
- "Exploring HI Density Around & Between Lyman Alpha Emitters in HETDEX", **Mahan Mirza Khanlari** et al. in prep for 2024.

## TALKS

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- Applications of Machine Learning in HETDEX, **UT Board of Visitors (BoV) meeting**, McDonald Observatory, Fort Davis, TX - Feb 2024
- Exploring HI Density Around & Between Lyman Alpha Emitter, **HETDEX Large Scale Structure Group**, Oct 2023

## PUBLIC OUTREACH

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**Astronomy Student Association**, **University of Texas at Austin**, Department of Astronomy

Public Outreach Event, Enchanted Rock, TX, Oct 2022

- Provided telescopes for attendees, enabling direct observations of celestial objects including planets and nebulae.
- Offered detailed explanations and insights on the observed celestial objects, enriching the attendees' understanding and appreciation.

## EXPERIENCE

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**University of Texas at Austin**, Department of Astronomy

*McDonald Observatory Student Assistant*, May 2022 – Aug 2022

Supervisor: Anna Boxall

- Assisted in administrative tasks, including preparing and dispatching monthly mail correspondence to the observatory donors.
- Updated member profiles, recorded donations, and managed communications, sending both weekly and monthly emails.

**University of Texas at Austin**, Gregory Gymnasium

*Facility Assistant*, May 2022 – Aug 2022 | May 2023 – Aug 2023

Supervisor: Ian Overman

- Maintained gym facilities and ensured safety and cleanliness.
- Assisted gym members with queries and equipment.

## TECHNICAL SKILLS

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- Python
- Machine Learning: t-SNE, Umap, PCA, TensorFlow
- Experience with Linux computing environment
- Parallel computing using slurm job scheduling
- Experience with JupyterLab environment
- Photoshop, Lightroom
- Astrophotography, Macro photography

## LANGUAGES

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- English: Fluent
- Persian: Native