

# Dr. Farhanul Hasan

POSTDOCTORAL FELLOW · SPACE TELESCOPE SCIENCE INSTITUTE

Muller 308 · 3700 San Martin Dr · Baltimore, MD-21218

✉ [fhasan@stsci.edu](mailto:fhasan@stsci.edu) | 🌐 <https://farhantasy.github.io/>

## Education

### New Mexico State University

Las Cruces, NM

PH.D.: ASTRONOMY; DEGREE RECEIVED: AUG 2024; ADVISOR: JOSEPH BURCHETT

Aug. 2018 - Aug. 2024

THESIS: "ON THE EVOLUTION OF GALAXIES IN COSMIC ECOSYSTEMS"

M.SC.: ASTRONOMY; DEGREE RECEIVED: AUG. 2022; ADVISORS: JOSEPH BURCHETT & CHRIS CHURCHILL

Aug. 2018 - Aug. 2022

### Reed College

Portland, OR

B.A.: PHYSICS; DEGREE RECEIVED: MAY 2018; THESIS ADVISORS: ALISON CROCKER & JOHNNY POWELL

Aug. 2014 - May 2018

THESIS: "INTO THE VOID: MASS FUNCTION OF SUPERMASSIVE BLACK HOLES IN THE LOCAL UNIVERSE"

## Experience

### Space Telescope Science Institute

Baltimore, MD

POSTDOCTORAL RESEARCH FELLOW

Sept 2024 - Present

- Processing and analyzing grism spectroscopy and imaging data from James Webb and Hubble Space Telescopes
- Studying the physical properties of intermediate- and high-redshift galaxies, including metallicities and star formation rates
- Mapping the cosmic web, studying its gas properties and interplay with galaxy evolution, and making predictions for future galaxy surveys

### New Mexico State University

Las Cruces, NM

GRADUATE RESEARCH ASSISTANT

Aug 2018 - Aug 2024

- Analyzing observed quasar spectra and cosmological simulations
- Developing new tools for large-scale structure identification from simulated and observational data
- Observing with ground-based telescopes at Apache Point and Keck Observatories

SCIENCE DEVELOPMENT LEAD, *CosmoVis*

May 2021 - Aug 2024

- Developing and improving *CosmoVis*, an open-source astrophysical 3D data visualization tool for exploring and analyzing hydrodynamical cosmological simulations of the universe, including identifying and implementing scientific uses and elucidating observations

GRADUATE TEACHING ASSISTANT

Aug. 2018 - Dec. 2022

Including ASTR 1115G/110G: Introduction to Astronomy, ASTR 305V: Life in the Universe, and ASTR 105G: The planets

### Reed College

Portland, OR

UNDERGRADUATE RESEARCH ASSISTANT

May 2017 - Aug 2018

Analyzing large SDSS photometric and spectroscopic catalogs and photometric images of nearby spiral galaxy NGC 4736

### University of California, Irvine

Irvine, CA

UNDERGRADUATE RESEARCH ASSISTANT

June 2016 - Aug. 2017

Analyzing space-based spectroscopic galaxy data, obtaining spectral energy distributions from UV to IR and measuring physical properties

## Selected Publications

**Hasan, F., et al., "Impact of Cosmic Filaments on Galaxy Morphological Evolution and Predictions of Early Cosmic Web Structure for Roman" *The Astrophysical Journal*, Volume 1004, Number 1, Page 74, Jun. 2026.**

Luber, N., **Hasan, F., et al. "CHILES IX: Observational and Simulated HI Content and Star Formation of Blue Galaxies in Different Cosmic Web Environments" *The Astrophysical Journal*, Volume 985, Number 2, Page 214, May 2025.**

**Hasan, F., et al., "Filaments of The Slime Mold Cosmic Web And How They Affect Galaxy Evolution" *The Astrophysical Journal*, Volume 970, Number 2, Page 177, Aug 2024.**

**Hasan, F., et al., "The Evolving Effect Of Cosmic Web Environment On Galaxy Quenching" *The Astrophysical Journal*, Volume 950, Number 2, Page 114, Jun 2023.**

**Hasan, F., et al., "Evolution of CIV Absorbers. II. Where Does CIV Live?" *The Astrophysical Journal*, Volume 924, Number 1, Page 12, Jan 2022.**

**Hasan, F., et al., "Evolution of CIV Absorbers. I. The Cosmic Incidence" *The Astrophysical Journal*, Volume 904, Number 1, Page 44, Nov 2020.**

Acharyya, A.,..., **Hasan, F.**, et al., “**Spatially resolved gas-phase metallicity at  $z \sim 2 - 3$  with JWST/NIRISS**”. *Astronomy & Astrophysics*. Volume 712. Number A136. Aug. 2026.

Goovaerts, I.,..., **Hasan, F.**, et al., “**MXDFz4.4: A LyC emitter 250 Myr after the epoch of reionization and a first test of Ly $\alpha$  morphology as a tracer of LyC escape at high redshift**”. accepted, *Astrophysical Journal*. Jun. 2026.

Malkan, M.,..., **Hasan, F.**, et al., “**Parallel Application of Slitless Spectroscopy to Analyze Galaxy Evolution (PASSAGE): Survey Overview**”. *The Astrophysical Journal*, Volume 993, Number 1, Page 152, Oct 2025.

Runnholm, A.,..., **Hasan, F.**, “**The JWST/PASSAGE Survey: Testing Reionization Histories with JWST’s First Unbiased Survey for Lyman alpha Emitters at Redshifts 7.5-9.5**” *The Astrophysical Journal*, Volume 984, Number 1, Page 95, May 2025.

Huberty, M.,..., **Hasan, F.**, et al., “**The NIRISS PASSAGE Spectroscopic Redshift Catalog in COSMOS**”. *Astrophysical Journal Supplements*. Volume 284, Issue 2, Page 64 Jun. 2026.

Nandi, G., Guo, Y., **Hasan, F.**, et al., “**Frozen in Size: Rest-frame Near-infrared Size Evolution of Quiescent and Star-forming Galaxies since Redshift  $z = 4$  with JWST**”. in review, *Astrophysical Journal*. Apr. 2026.

Finlator, K.,..., **Hasan, F.**, et al., “**Mapping the  $z \geq 5$  SiIV Column Density Distribution onto the Galaxy Stellar Mass Function Using the Cumulative Absorption Cross Section**”. accepted, *Astrophysical Journal*. Jul. 2026.

Woo, J., Cowan, M., **Hasan, F.**, et al., “**The Cosmic Web Origins of Blue-Centred Galaxies**”. in review, *Nature Astronomy*. Jul. 2025.

## Awards & Grants

|         |                                                                                                     |                                   |
|---------|-----------------------------------------------------------------------------------------------------|-----------------------------------|
| 2025-   | <b>PI: NASA High-End Computing Allocation SMD-24-54390923</b> , NASA Advanced Supercomputing Center | <a href="#">Mountain View, CA</a> |
| 2024-   | <b>Science PI: Director’s Discretionary Research Award</b> , Space Telescope Science Institute      | <a href="#">Baltimore, MD</a>     |
| 2024-   | <b>Science PI: HST Cycle 31 Archival Research Award #17568</b> , Space Telescope Science Institute  | <a href="#">Baltimore, MD</a>     |
| 2023    | <b>Arts &amp; Sciences Travel Grant</b> , College of Arts & Sciences, New Mexico State University   | <a href="#">Las Cruces, NM</a>    |
| 2021-22 | <b>Merit-based Enhancement Award</b> , Graduate School, New Mexico State University                 | <a href="#">Las Cruces, NM</a>    |
| 2021    | <b>Zia Award for Outstanding Research by a Graduate Student</b> , Dept. of Astronomy, NMSU          | <a href="#">Las Cruces, NM</a>    |
| 2019-20 | <b>College of Arts &amp; Sciences General Scholarship</b> , New Mexico State University             | <a href="#">Las Cruces, NM</a>    |
| 2018-20 | <b>William Webber Voyager Fellowship</b> , Dept. of Astronomy, NMSU                                 | <a href="#">Las Cruces, NM</a>    |
| 2018    | <b>Commendation for Academic Excellence</b> , Reed College                                          | <a href="#">Portland, OR</a>      |
| 2017    | <b>Research Fellowship Award</b> , Reed College                                                     | <a href="#">Portland, OR</a>      |
| 2017    | <b>Research Opportunity Grant</b> , Reed College                                                    | <a href="#">Portland, OR</a>      |
| 2016    | <b>Summer Experience Award</b> , Reed College                                                       | <a href="#">Portland, OR</a>      |

## Selected Invited Talks

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|--------------------------------------------------------------------------------------------------------|-----------------------------------|
| <b>PASSAGE ISSI Collaboration Meeting</b>                                                              | <a href="#">Bern, Switzerland</a> |
| “GALAXY MORPHOLOGIES AND THEIR RELATIONSHIP WITH MASS, STAR FORMATION, AND METALLICITY AT COSMIC NOON” | <a href="#">Feb. 2026</a>         |
| <b>University of Missouri, Columbia Astrophysics Seminar</b>                                           | <a href="#">Columbia, MO</a>      |
| “GALAXY EVOLUTION IN THE COSMIC WEB: FROM LARGE TO SMALL SCALES OF COSMIC ECOSYSTEMS”                  | <a href="#">Sep. 2025</a>         |
| <b>2025 Santa Cruz Galaxy Workshop</b>                                                                 | <a href="#">Santa Cruz, CA</a>    |
| “THE EARLY COSMIC WEB: IMPACT ON GALACTIC MORPHOLOGICAL EVOLUTION AND PREDICTIONS FOR ROMAN”           | <a href="#">Aug. 2025</a>         |
| <b>Baryon Pasting Collaboration 2025 meeting</b>                                                       | <a href="#">New Haven, CT</a>     |
| “MODELING COSMIC WEB FILAMENTS: CHALLENGES, ADVANCEMENTS, AND FUTURE DIRECTIONS”                       | <a href="#">Apr. 2025</a>         |
| <b>Yale University Special Galaxy Seminar</b>                                                          | <a href="#">New Haven, CT</a>     |
| “COSMIC FILAMENTS: FRIENDS OF FOE OF GALAXY EVOLUTION?”                                                | <a href="#">Apr. 2025</a>         |
| <b>College University of New York (NYC College of Technology) Theoretical Physics Seminar</b>          | <a href="#">New York, NY</a>      |
| “THE SLIME MOLD COSMIC WEB AND WHAT IT TEACHES US ABOUT GALAXY EVOLUTION”                              | <a href="#">Nov. 2024</a>         |
| <b>Princeton University Galaxy Discussion Journal Club (Galread)</b>                                   | <a href="#">Princeton, NJ</a>     |
| “FILAMENTS OF THE SLIME MOLD COSMIC WEB AND HOW THEY AFFECT GALAXY EVOLUTION”                          | <a href="#">Oct. 2024</a>         |
| <b>2024 Santa Cruz Galaxy Workshop</b>                                                                 | <a href="#">Santa Cruz, CA</a>    |
| “FILAMENTS OF THE SLIME MOLD COSMIC WEB”                                                               | <a href="#">Aug. 2024</a>         |
| <b>Steward Observatory/NOIRLab Galaxy Group</b>                                                        | <a href="#">Tucson, AZ</a>        |
| “A COSMIC CONNECTION: HOW GALAXY FORMATION IS AFFECTED BY THE COSMIC WEB”                              | <a href="#">Oct. 2023</a>         |

## Space Telescope Science Institute/Johns Hopkins University Galaxies & AGN Journal Club

"A COSMIC CONNECTION: HOW GALAXY FORMATION IS AFFECTED BY THE COSMIC WEB"

[Baltimore, MD](#)

Sep. 2023

## Columbia University Seminar

"A COSMIC CONNECTION: HOW GALAXY FORMATION IS AFFECTED BY THE COSMIC WEB"

[New York, NY](#)

Sep. 2023

## Yale University Galaxy Lunch

"A COSMIC CONNECTION: HOW GALAXY FORMATION IS AFFECTED BY THE COSMIC WEB"

[New Haven, CT](#)

Sep. 2023

## Arizona State University Borthakur Extragalactic Group

"THE IMPACT OF COSMIC WEB STRUCTURES ON GALAXY FORMATION"

[Tempe, AZ \(Virtual\)](#)

Sep. 2022

## 2022 Santa Cruz Galaxy Workshop

"THE IMPACT OF COSMIC WEB STRUCTURES ON GALAXY FORMATION"

[Santa Cruz, CA](#)

Aug. 2022

## Selected Contributed Talks

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### The Baryon Cycle from Reionization to the Cosmic Noon

"THE EVOLVING ROLE OF THE COSMIC WEB IN GROWING AND SHAPING GALAXIES"

[Puerto Varas, Chile](#)

Dec. 2025

### "Some Like It Hot!" A Journey from the Hot IGrM to the Multiphase CGM

"A COSMIC CONNECTION: THE IMPACT OF THE COSMIC WEB ON GALAXY EVOLUTION"

[Garching, Germany](#)

May 2025

### 243rd Meeting of the American Astronomical Society

"A COSMIC CONNECTION: THE EFFECT OF THE COSMIC WEB ON GALAXY EVOLUTION" (DISSERTATION TALK)

[New Orleans, LA](#)

Jan. 2024

### Oases in the Cosmic Desert: Understanding the Structure of the Circumgalactic Medium

"THE CONNECTION BETWEEN GALAXY QUENCHING AND COSMIC WEB STRUCTURES ACROSS COSMIC TIME"

[Tempe, AZ](#)

Feb. 2023

### The Co-evolution of the Cosmic Web and Galaxies across Cosmic Time at KITP

"HOW DO COSMIC WEB STRUCTURES AFFECT GALAXY QUENCHING ACROSS COSMIC TIME?"

[Santa Barbara, CA](#)

Feb. 2023

## Service and Leadership

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### Guest Lecturer, JHU pre-college "Exploring the universe with Space Telescopes" program

JOHNS HOPKINS UNIVERSITY

[Baltimore, MD](#)

Jun 2026 – Aug 2026

### Local Organizing Committee, STScI Spring Symposium 2026

SPACE TELESCOPE SCIENCE INSTITUTE

[Baltimore, MD](#)

Jan 2026 – Present

### Panel Support Scientist, JWST Cycle 5 Peer Review

SPACE TELESCOPE SCIENCE INSTITUTE

[Baltimore, MD](#)

Nov 2025 – Feb 2026

### HotSci 2025 Summer Colloquium Series Organizer

SPACE TELESCOPE SCIENCE INSTITUTE

[Baltimore, MD](#)

Apr 2025 – Aug 2025

### Postdoc Representative to the Science Mission Office

SPACE TELESCOPE SCIENCE INSTITUTE

[Baltimore, MD](#)

Feb 2025 – Present

### Journal Paper Referee

APJ, A&A, MNRAS, OJAA, RASTI

[Virtual](#)

May 2023 – Present

### Co-supervisor/Research Mentor

DEPARTMENT OF ASTRONOMY, NEW MEXICO STATE UNIVERSITY

[Las Cruces, NM](#)

May 2022 - Aug. 2024

### Executive Secretary for NASA Astrophysics Proposal Review Panel

NASA ROSES

[NASA](#)

May 2023

### President, Bangladesh Student Association (BSA)

NEW MEXICO STATE UNIVERSITY

[Las Cruces, NM](#)

Aug. 2023 - Aug. 2024

### Mentor for Prospective Graduate Students

CIENTÍFICO LATINO GRADUATE STUDENT MENTORSHIP INITIATIVE (GSMI)

[Científico Latino](#)

Jul. 2020 - May 2022

### Community Outreach Volunteer

DEPARTMENT OF ASTRONOMY, NEW MEXICO STATE UNIVERSITY

[Las Cruces, NM](#)

Aug. 2018 - Aug. 2024

### Co Mentor, UC CROSS

GOOGLE SUMMER OF CODE 2022

[UC Santa Cruz](#)

Jun. 2022-Dec. 2022

### Secretary, Astronomy Graduate Student Organization (AGSO)

DEPARTMENT OF ASTRONOMY, NEW MEXICO STATE UNIVERSITY

[Las Cruces, NM](#)

Aug. 2019 - May 2020