

Research Interest

- ★ Environments of luminous high-redshift quasars
- ★ Active Galactic Nuclei and Galaxy Evolution
- ★ Formation and evolution of Large scale structures
- ★ Populations of dwarf galaxy in clusters and Groups

Early Research Career

Postdoctoral Fellow:

Centre for Space Research, North-West University, South Africa — — — March 2024 – Present

Professional Memberships

President: Astronomical Society of Ethiopia — — — March 2025 – Present

Member: African Astronomical Society — — — Since January 2018

Education

Ph.D. in Astrophysics

Institute of Astrophysical Studies

Diego Portales University, Santiago, Chile — — — March 2019 – October 2023

Thesis: Hot Dust Obscured Galaxies Environments

Supervisor: Prof. Dr. Roberto J. Assef

Master in Astronomy and Astrophysics

Entoto Observatory and Research Centre,

Ethiopian Space Science and Technology Institute,

Addis Ababa University, Addis Ababa, Ethiopia — — — October 2016 – July 2018

Thesis: Properties of Local Galaxies with the Highest Growth Rate

Supervisor: Dr. Mirjana Pović

Bachelor of Science in Physics

Physics Department, College of Natural and Computational Sciences

Debre Berhan University, Debre Berhan, Ethiopia — — — September 2013 – July 2016

Senior Project: Brief Review of Carbon Nanotubes and Their Applications in Space Elevator

Supervisor: Mr. Abel Tesfaye

Scholarship Awards

1. **Ph.D. Scholarship from CATA-UDP, Santiago, Chile** (September 2023 - October 2023)
2. **Ph.D. Scholarship from Beca de Doctorado ANID, Santiago, Chile** (March 2021 - Aug. 2023)
3. **Ph.D. Scholarship from the Universidad Diego Portales, Santiago, Chile** (March 2019 - February 2021)
4. **Master of Science Scholarship from the Minister of Education, Ethiopia** (Sept. 2016 - July 2018)
5. **Bachelor of Science Scholarship from Debre Berhan University, Ethiopia** (October 2013 - July 2016)

Observing Experience

1. 1 night with Inamori Magellan Areal Camera and Spectrograph (IMACS) at Baade, Las Campanas Observatory, Chile (March 2024)
2. nights with Magellan Inamori Kyocera Echelle (MIKE) in Clay, Las Campanas Observatory, Chile (July 2023)

Research Grants

- 2024/2025 AfAS Early-Career Seed Research Grant \$ 1, 200

Teaching Experience

Lecturer: Astro- and Space Physics (NPHY323/FSKS323)

North-West University — — — July 2025 – December 2025

Teaching Assistant: Scaling the Universe

Universidad Diego Portales, Chile — — — April 2023 – July 2023

Introductory astronomy course for Undergraduate Students of Diverse Academic Background

Lecturer: Mechanics (Phys 2001) and Electromagnetism (Phys 2002)

Debre Berhan University, Ethiopia — — — July 2018 – February 2019

For First year undergraduates in physics

Physics Laboratory Assistant: Experiments in mechanics (Phys 2101) and Electromagnetism (Phys 2102)

Debre Berhan University, Ethiopia — — — July 2016 – October 2016

Provided technical support for undergraduate laboratory courses, including equipment preparation.

Student Supervision

Honours Project Supervisor:

Karabo Wiseman Khosa, “*Radio Properties of Active Galactic Nuclei Populations*”

Centre for Space Research, North-West University — — — July 2025 – December 2025

Telescope Time Awarded as P.I.

1. **SALT long-slit for 7 hrs:** Spectroscopic follow-up of HI-detected dwarf galaxies.
2. **VLT/FORS2 for 16 hrs:** Lyman-Break Galaxies around the Most Luminous Obscured Quasar Known.
3. **Magellan/IMACS for 1 night:** Lyman-Break Galaxies around a population of hyper-luminous, heavily obscured, extremely red quasars.

Telescope Time Awarded as Co-P.I.

1. **SALT IFS large-Program:** PanAfroAGN-SI: Pan-African AGN survey using SALT/IFS
2. **SALT IFS:** Spectroscopic follow-up of HI-detected dwarf galaxies from the MeerKAT Fornax Survey

Workshops and Schools

1. 18th Heidelberg Summer School: **Unraveling Galaxy Evolution with JWST**, Heidelberg, Germany (Sept. 2023)
2. Warwick Astronomy Knowledge Exchange program (WAKE), Coventry, UK (July 2022)

3. XXX Canary Islands Winter School of Astrophysics: **Big Data Analysis in Astronomy**, Tenerife, Spain (November 2018)
4. 5th Biennial School of Fundamental Physics and Applications, Windhoek, Namibia (June 2018)
5. 39th International School for Young Astronomers (ISYA), Addis Ababa, Ethiopia (May 2017)

Conferences

Selected contributed Talks:

1. **69th annual conference of the South African Institute of Physics**, 7-11 July 2025, University of Wits, Johannesburg, South Africa
Multi-Wavelength Observations of AGN Activity in the Fornax Cluster
2. **General Assembly and 5th Annual Conference of the African Astronomical Society**, held 23-28 March 2025 at the University of South Africa (UNISA)
 - Star Formation Histories and Evolutionary Pathways of Fornax Galaxies
 - Exploring the Environments of Hyper-Luminous Obscured Quasars
3. **AGN across continents, Newcastle University & Durham University, UK** (July 2024):
Clustering of LBG Candidates Around Luminous Hot DOGs
4. **Joint Observatories Kavli Science Forum, Santiago, Chile** (April 2022):
Environments of Hot Dust Obscured Galaxies

Selected contributed Posters:

1. **IAU General Assembly, Cape Town, South Africa** (August 2024):
Multiwavelength Studies of Fornax Cluster Galaxies
2. **UK National Astronomy Meeting, University of Warwick, UK** (July 2022):
Clustering of LBG Candidates Around Hot DOGs

Publications

NASA/ADS Profile: [Link](#)

Citation Metrics (NASA/ADS, February 2026):

Total citations: 100

h-index: 6

First-author papers: 30 citations

1. **Ionised gas morphology and star formation quenching in gas-rich Fornax galaxies**
Zewdie, Dejene, Loubser, Ilani, S. et al. Plan to submit this month
2. **Overdensity of Lyman-break galaxy candidates around hot-dust-obscured galaxies**
Zewdie, Dejene; Assef, Roberto J.; Lambert, Trystan Mazzucchelli, Chiara; Aravena, Manuel; et. al. 2025, A&A, 694, A121
3. **An Overdensity of Lyman Break Galaxies Around the Hot Dust-Obscured Galaxy WISE J224607.56-052634.9**
Zewdie, Dejene; Assef, Roberto J.; Mazzucchelli, Chiara; Aravena, Manuel; et. al. 2023, A&A, 677, A54
4. **AGN and Star-Formation Properties of Inside-out Assembled Galaxy Candidates at $z < 0.1$**
Zewdie, Dejene; Pović, Mirjana ; Aravena, Manuel ; Assef, Roberto J. ; Gaulle, Asrate 2020, MNRAS, 498, 4345

Co-Author Papers:

- 1. A Massive Gas Outflow Outside the Line-of-Sight: Imaging Polarimetry of the Blue Excess Hot Dust Obscured Galaxy W0204-0506**
Assef, Roberto J. ; Stalevski, Marko ; Armus, Lee ; Bauer, Franz E. ; Blain, Andrew ; Brightman, Murray ; Díaz-Santos, Tanio ; Eisenhardt, Peter R. M. ; Fernández-Aranda, Román ; Jun, Hyunsung D. ; Liao, Mai ; Li, Guodong ; Martin, Lee R. ; Shablovinskaia, Elena ; Shobhana, Devika ; Stern, Daniel ; Tsai, Chao-Wei ; Vayner, Andrey ; Walton, Dominic J. ; Wu, Jingwen ; **Zewdie, Dejene**, 2025, A& A, 702, A124.
- 2. Searching for Low-redshift Hot Dust-obscured Galaxies**
Li, Guodong; Wu, Jingwen; Tsai, Chao-Wei; Stern, Daniel; Assef, Roberto J.; Eisenhardt, Peter R. M. ; McCarthy, Kevin; Jun, Hyunsung D.; Diaz-Santos, Tanio; Blain, Andrew W.; Lambert, Trystan; **Zewdie, Dejene**; Fernández Aranda, Román; Li, Cuihuan; Wang, Yao ; Tan, Zeyu, 2025 V981,2,104.
- 3. Spatially resolved dust properties over 50 kpc in a hyperluminous galaxy merger at $z=4.6$**
Fernández Aranda, Román ; Díaz Santos, Tanio ; Hatziminaoglou, Evanthia ; Aravena, Manuel ; Stern, Daniel ; Armus, Lee ; Assef, Roberto J. ; ... **Zewdie, Dejene** 2025, V695, L15.
- 4. Powerful nuclear outflows and Circalactic Medium Shocks Driven by the most luminous quasar in the Universe**
Vayner, Andrey ; Díaz-Santos, Tanio ; Eisenhardt, Peter R. M. ; Stern, Daniel ; Armus, Lee ; Anglés-Alcázar, Daniel ; Assef, Roberto J. ; .. **Zewdie, Dejene** 2024, ApJ, 989, 230.
- 5. Black Hole Mass and Eddington Ratio Distribution of Hot Dust-Obscured Galaxies**
Li, Guodong; Assef, Roberto J.; Tsai, Chao-Wei; Wu, Jingwen; Eisenhardt, Peter R. M. ; Stern, Daniel; Díaz-Santos, Tanio; Blain, Andrew W. ; Jun, Hyunsung D. ; Fernández Aranda, Román; **Zewdie, Dejene**, 2024, ApJ, 971, 1,40, 11
- 6. A benchmark for extreme conditions of the multiphase interstellar medium in the most luminous hot dust-obscured galaxy at $z = 4.6$**
Fernández Aranda, Román; Díaz Santos, Tanio; Hatziminaoglou, Evanthia; Assef, Roberto J. ; Aravena, Manuel; Eisenhardt, Peter R. M. ;... **Zewdie, Dejene**, 2024, A& A, 682, A166

References

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