Curriculum Vitae

Tae Bong Jeong

School of Space Research, Kyung Hee University, Republic of Korea | csvwnb@khu.ac.kr

Education

University of Texas at Austin — Austin, Texas, USA

Doctorate, Department of Astronomy — Aug. 2025 -

- Advisor: Prof. Volker Bromm

Kyung Hee University — Yongin-si, Republic of Korea

M.S., School of Space Research — Mar. 2022 - Feb. 2025 (Expected)

- Dissertation topic: *Simulating high-redshift galaxies: Enhancing UV luminosity with star formation efficiency and a top-heavy IMF*
- Advisor: Prof. Myoungwon Jeon
- GPA: 4.11/4.3

B.S., Department of Astronomy & Space Science — Mar. 2015 - Feb. 2019

- GPA: 3.47/4.3

Research Interests

- Cosmology, Computational Astrophysics
- Formation and Evolution of the First Generation of Stars and Galaxies and Their Observabilities
- Formation and Evolution of Dwarf Galaxies and Ultra Faint Dwarf Galaxies
- Numerical Simulations of Star Formation, Stellar Feedback, and Reionization of the Universe

Academic Experience

University of Texas at Austin — Austin, Texas, USA

Graduate Student, Department of Astronomy — Aug. 2025 -

- Worked as a graduate research assistant (GRA) since August 2025.
- **[Pop III galaxy simulation in EoR]** Performed cosmological hydrodynamics zoom-in simulations (GADGET3) focused on physical environments and sub-grid physics related to star formation for investigating the formation and evolution of Pop III galaxies in the Epoch of Reionization (EoR) and the high-end limit of Pop III starburst in the Pop III galaxies.

Kyung Hee University — Yongin-si, Republic of Korea

Master's degree researcher, Department of Astronomy & Space Science — Mar. 2025 - Aug. 2025

- **[High-z galaxy simulation]** Performed cosmological hydrodynamics zoom-in simulations (GADGET3) focused on adjusting the sub-grid recipes related to the stellar feedback and radiative transfer model.
- **[Pop III galaxy simulation]** Performed cosmological hydrodynamics zoom-in simulations (GADGET3) focused on reproducing a Pop III galaxy on the Epoch of Reionization (EoR).

Master's Graduate Student, School of Space Research — Mar. 2022 - Present

- Worked as a research assistant (RA) from March 2022 to February 2023.

- **[High-z galaxy simulation]** Performed cosmological hydrodynamics zoom-in simulations (GADGET3), investigated the physical properties and evolution of high-z ($z \geq 9$) galaxies, and confirmed their observabilities using synthetic observational procedures.
- **[High-z galaxy simulation]** Constructed the computational pipeline between FSPS, Yggdrasil model, HYPERION, and CLOUDY to produce synthetic observational results for simulated galaxies.
- **[UFDs in the Local Group]** Conducted cosmological hydrodynamics zoom-in simulations (GADGET3) with individual star formation methods, investigated the stellar metallicity – stellar mass relation (MZR) and size relation within ultra-faint dwarf galaxy regimes, metallicity distribution of stars in UFDs for mitigating the discrepancies between observed UFDs.
- **[Discovering population of high-z galaxies]** Ran the DM-only large box simulations with various simulation codes (GADGET3, RAMSES) using initial conditions adopting different matter power spectrum models.
- **[Discovering population of high-z galaxies]** From the DM-only large box simulation results, calculated halo mass functions and the UV luminosity functions at the high-z Universe to explain the recent JWST observation results about the over-dense populations of high-z galaxies.

Publications

Jeong, Tae Bong; Jeon, Myoungwon; Song, Hyunmi; Bromm, Volker, 2025, *Astrophysical Journal*, 986:10 (27pp)
"*Simulating High-redshift Galaxies: Enhancing UV Luminosity with Star Formation Efficiency and a Top-heavy IMF*"
arXiv preprint : https://arxiv.org/abs/2411.17007

Ko, Minsung; Jeon, Myoungwon; Choi, Yumi; Kallivayalil, Nitya; Sohn, Sangmo Tony; Besla, Gultina; Richstein, Hannah; Fu, Sal Wanying; **Jeong, Tae Bong**; Shin, Jihye, 2024, *Astrophysical Journal*, *Submitted*
"*Understanding Stellar Mass-Metallicity and Size Relations in Simulated Ultra-Faint Dwarf Galaxies*"
arXiv preprint : https://arxiv.org/abs/2411.14683

Technical Skills

- Expertise with C and Python.
- Familiar with Fortran and IDL.
- Familiar with GADGET, MUSIC, ROCKSTAR, HYPERION, and Cloudy.
- Familiar with parallel computation coding with the Message Passing Interface (MPI).
- Expertise with Linux OS and its maintenance, especially CentOS 7 and 8.

Professional Experience

Manager of High-Performance Computing (HPC) Servers Sep. 2023 - Present

- Managed 3 servers and 4 clusters (x64, x128, x128, x256 CPUs) combined.
- Established system environments including environment variables, security settings, cluster building, and compilers.
- Managed hardware systems, researchers' server usage, licenses, and storage backups on Linux computational servers.

Teaching Experience

Kyung Hee University Yongin-si, Republic of Korea
Teaching Assistant, Department of Astronomy and Space Science Mar. 2022 - Feb. 2023

- Teaching assistant for two undergraduate courses for two semesters *"Space Numerical Computation"* and *"Scientific Programming with Python"*.
- Prepared and led the weekly coding practice sessions for 30 – 40 students and graded weekly assignments and mid-term and final exams for each course.

Presentations

May.	2024	First Star VII in New York (poster presented)
Apr.	2024	109th KAS Spring Meeting in Yeosu (poster presented)
Oct.	2023	108th KAS Fall Meeting in Jeju (talk presented)
Jan.	2023	2023 Numerical Galaxy Formation - DARWIN Workshop (talk presented)

Awards & Scholarship

Exemplary Scholarship for General Graduate Students (Kyung Hee Univ., full scholarship)	2023
Research Assistance Matching Scholarship (Kyung Hee Univ.)	2022
Baek-Woon Scholarship for Academic Excellence	2018
Scholarship for Academic Excellence Undergraduates (Kyung Hee Univ.)	2018
Scholarship for Academic Excellence Undergraduates (Kyung Hee Univ. ROTC)	2018

Leadership & Outreach

Student Council for Graduate School of Kyung Hee University	Jan. 2023 - Dec. 2023
Military Service at the Republic of Korea Army	Mar. 2019 – Jun. 2021

- Served as an army officer (Lieutenant) at the 56th Division.
- Worked as a headquarters company commander, human resource officer in the battalion, and interpreter officer.

1081 Reserve Officers' Training Corps	Feb. 2017 – Feb. 2019
Organizing Committee for Public Observation Event in KHU Observatory	2016, 2017
Assistant Lecturer for Astronomical Programs at KHU Observatory	Sep. 2016 – Dec. 2017
Student Council for Department of Astronomy and Space Science of KHU	Jan. 2016 – Dec. 2016

References

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