

Intae Jung

Postdoctoral Fellow at the Space Telescope Science Institute

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Lyman- α Emitter | Reionization | High-Redshift Galaxies | Machine Learning

Academic Employment

Postdoctoral Researcher at the Space Telescope Science Institute	08/2022 – Present
JWST Postdoc at NASA's Goddard Space Flight Center (Sponsor: CUA)	09/2019 – 08/2022

Education

Ph.D. in Astronomy, University of Texas at Austin , Texas, USA	2013 – 2019
Advisor: Prof. Steven L. Finkelstein	
M.S. in Astronomy , Graduate School of Yonsei University , Seoul, South Korea	2010 – 2012
Advisor: Prof. Sukyoung K. Yi	
B.S. in Astronomy and Physics (double major), Yonsei University , Seoul, South Korea	2004 – 2010

Fellowships, Awards, and Grants

KASI-Arizona Joint Postdoctoral <i>Fellowship</i> , Steward Observatory & KASI, Korea (4yrs , <i>Declined</i>)	2022
CRESST II Postdoc Fellow for an <i>Independent Science Program</i> at NASA GSFC, MD (3yrs)	2019 – 2022
NASA/Keck Observing Grant 2021A (\$16,100)	2021 Spring
Chambliss Astronomy Achievement Student <i>Awards</i> , 233rd AAS Meeting, Seattle, WA	01/2019
The NASA Earth and Space Science <i>Fellowship (NESSF)</i> (\$45,000/year, up to 3yrs)	2017 – 2019
University Graduate School Continuing <i>Fellowship</i> , UT Austin, TX, USA (~\$25,000)	2017 – 2018
The Global Internship Program, The National Research Foundation of Korea (~\$21,200)	2011 – 2012
National Science & Technology <i>Scholarship</i> , South Korea (~\$27,100)	2004 – 2009

Awarded Telescope Time

PI: I. Jung , NASA Keck 2021A: 2 nights of Keck + MOSFIRE	2021 Spring
Title: <i>Probing Inhomogeneity of Reionization with a Deep and Wide Lyman-Alpha Emission Survey at $z > 7$</i>	
PI: I. Jung , Gemini North + GNIRS (6.2 hr)	2021 Spring
Title: <i>Near-infrared Spectroscopy of an Extremely-Large Equivalent-width Lyman-alpha Emitter at $z=7.608$</i>	
PI: I. Jung , HET/LRS2 (~13hr) Title: <i>A spectroscopic search for galaxies in the epoch of reionization</i>	2017 Spring
As Co-Investigator	
JWST 9 GO programs – PIs: Chisholm (Cy1), Dunlop (Cy1), Finkelstein (Cy1), Kassin (Cy1), Abdurro'uf (Cy2), Zavala (Cy2), Dickinson (Cy3), Kartaltepe (Cy3), Hutchison (Cy3)	
Keck 50+ nights with DEIMOS, LRIS, MOSFIRE – PIs: Cooper, Casey, Finkelstein, Larson, Hutchison	
HST 2 GO & 2 AR programs – PIs: Finkelstein, Jimenez-Andrade, Cleri	
ALMA 1 Cycle 7 (24.7 hr) – PI: Hashimoto & 1 Cycle 8 DDT (11.7hr) – PI: Yoon	

Publication Statistics

64 papers in total (57 refereed), >2500 citations, H-index 29 (as of Mar 2024)
***11 1st/2nd author papers (>300 citations):** 9 1st-author papers (6 published, 3 currently under review)

Service Experience / Public Outreach

Panel Support Scientist for the JWST Cycle 3 TAC , STScI, Baltimore, MD	11/2023 – 02/2024
Subject Matter Expert* for NASA's Webb Space Telescope Community Events	2021 – 2022
*Speaker at the JWST Public Talk at Cape Fear Museum of History and Science on 10/15/2021	
Scientist Featured in a NASA JWST Astronomy Day Q&A in Social Media	05/2021
Subject-matter Expert Reviewer in a NASA peer review	2021
Proposal Review External Panel for HST (Cy 28 & 29), ALMA (Cy 8), & JWST DDT (Cy 1)	2020 – Present
Journal Referee for ApJ, A&A, MNRAS	2019 – Present
Development Team of Exemplar Key Science Programs For GMT and TMT	2018 Fall
Graduate student committee for the 2017 Dept external review self-study, UT Austin, TX	2017
Representative to the Graduate Student Assembly, UT Austin, TX	2016 – 2017
Student Representative at the Astronomy department, Yonsei University, Seoul, Korea	2007 – 2008
Military Service, the Military Police in Republic of Korea Army, Hwacheon, Korea	2005 – 2007

Teaching & Mentoring Experience

Mentor in the PhA Mentorship program, Physics & Astronomy, Johns Hopkins Univ. 2023 – Present
Department-wide mentorship program for all career levels (undergraduates, graduates, and postdocs)

Intern Student Mentoring

- Mentor for the STScI Space Astronomy Summer Program: Turaba Rahman (the Kent State Univ.) 2023
Project: *Spatially Resolved Stellar Populations of $z \sim 4 - 6$ Lyman-alpha-emitters with JWST imaging*
- Mentor for the Summer Internship Program at NASA GSFC: Seonwoo Kim (Yonsei Univ. → UIUC) 2022
Project: *Evolution of Lyman Alpha Line Widths at the End of Reionization*

Training in Teaching & Mentorship

Completion of *Concentration in Teaching and Mentoring Courses***, UT Austin, TX 08/2018

**Three courses for PhD and postdoctoral fellows for improving teaching and mentoring abilities

Guest lecture in *Galaxies and the Universe* class, UT Austin, TX 04/2017

TA for 7 astronomy courses at UT Austin, TX & Yonsei University, Korea 2010 – 2017

Collaborations

JWST-**CEERS** (PI: Finkelstein), JWST-**Cosmic Spring** (PI: Coe), JWST-**NGDEEP** (Co-PIs: Finkelstein, Papovich and Pirzkal), HST-**CLEAR** (PI: Papovich), HST-**CANDELS** (Co-PIs: Faber & Ferguson), VLT-**VANDELS** (Co-PIs: McLure, & Pentericci)

Colloquia/Seminar Talks

Colloquium, HotSci Summer Colloquium at JHU/STScI, Baltimore, MD, USA 08/2023
Seminar Talk, Arizona State University, Tempe, AZ, USA 11/2021
Seminar Talk, Georgia Tech, Atlanta, GA, USA 11/2021
EURECA Seminar Talk, University of Arizona, Tucson, AZ, USA 09/2021
Seminar Talk, Seoul National University, Seoul, Korea 07/2021
Seminar Talk, Yonsei University, Seoul, Korea 06/2021
Seminar Talk, Director's Seminar, SED, NASA GSFC, Greenbelt, MD 03/2021
Colloquium, Department of Physics and Astronomy, University of Louisville 02/2021
Seminar Talk, Galaxies & AGN Journal Club at STScI/JHU, Baltimore, MD, USA 02/2021
Colloquium, Astrophysics Science Division Colloquium, NASA GSFC, Greenbelt, MD 05/2020
Seminar Talk, University of California - Riverside, Riverside, CA 10/2018
Seminar Talk, Yonsei University, Seoul, Korea 04/2018
Best Paper Award Talk, Korean-American Scientists & Engineers Association-Austin, TX 02/2017
Seminar Talk, Korea Astronomy Space Science Institute, Daejeon, Korea 12/2016

Other Presentations

Contributed Talk, Roman Science Inspired by Emerging JWST Results, STScI, MD, USA 06/2023
Contributed Talk, CEERS Team Meeting, Austin, TX, USA 05/2023
Contributed Talk, Summer All Zoom Epoch of Reionization Astronomy Conference 2.0 06/2021
Contributed Talk, Summer All Zoom Epoch of Reionization Astronomy Conference 07/2020
Contributed Talk, AAS 235th Meeting, Honolulu, HI, USA 01/2020
Contributed Talk, Extremely Big Eyes ... UCLA, Los Angeles, CA, USA 01/2019
Contributed Talk, Special session talk, AAS 233rd Meeting, Seattle, WA, USA 01/2019
Poster, AAS 233rd Meeting, Seattle, WA, USA 01/2019
Poster, Tokyo Spring Cosmic Lyman-Alpha Workshop, Tokyo, Japan 03/2018
Contributed Talk, The growth of galaxies in the Early Universe – IV, Sesto, Italy 01/2018
Dissertation Talk, 231st AAS Meeting, Washington DC, USA 01/2018
Poster, BashFest 2017, Austin, TX, USA 10/2017
Contributed Talk, 5th GMT Community Science Meeting, Tarrytown, NY, USA 09/2017
Poster, AAS 230th Meeting, Austin, TX, USA 06/2017
Contributed Talk, Snowbird Cosmic Lyman-Alpha Workshop, Snowbird, UT, USA 03/2017
Contributed Talk, 2016 Santa Cruz Galaxy Workshop, Santa Cruz, CA, USA 08/2016

Contributed Talk, Signals from the Deep Past, Valletta, Malta	07/2016
Poster, AAS 227th Meeting, Kissimmee, FL, USA	01/2016
Contributed Talk, 2015 CANDELS Team Meeting, Santa Cruz, CA, USA	07/2015
Defense talk, Qualifying exam/2nd-year Defense, Austin, TX, USA	05/2015
Poster, South by High Redshift, Austin, TX, USA	04/2015
Contributed Talk, Sussing Merger Trees, Midhurst, West Sussex, UK	07/2013

References

Dr. Harry Ferguson, Space Telescope Science Institute, MD (ferguson@stsci.edu)
Prof. Steven Finkelstein, University of Texas at Austin, TX (stevenf@astro.as.utexas.edu)
Dr. Dan Coe, Space Telescope Science Institute, MD (dcoe@stsci.edu)

Publications

64 papers in total (57 refereed), >2500 citations, H-index 29 (as of Mar 2024)

As 1st/2nd Author (283 citations): 8 1st-author papers (6 published, 2 submitted)

1. **Jung et al. 2024, submitted to ApJ, arXiv: 2403.02388**, *Constraints on the Lyman Continuum Escape from Low-mass Lensed Galaxies at $1.3 \leq z \leq 3.0$*
2. **Jung et al. 2023, submitted to ApJ, arXiv:2304.05385**, *CEERS: Diversity of Lyman-Alpha Emitters during the Epoch of Reionization*
3. **Jung et al. 2022b, submitted to ApJ, arXiv:2212.09850**, *New $z > 7$ Lyman-alpha Emitters in EGS: Evidence of an Extended Ionized Structure at $z \sim 7.7$*
4. **Jung et al. 2022a, ApJ, 933, 87**, *CLEAR: Boosted Ly α Transmission of the Intergalactic Medium in UV bright Galaxies*
5. H. Park, **I. Jung**, et al. **2021, ApJ, 922, 263**, *Crucial Factors of Lyman-alpha Transmission in the Reionizing Intergalactic Medium: Infall Motion, HII Bubble Size, and Self-shielded Systems*
6. **Jung et al. 2020, ApJ, 904, 144**, *Texas Spectroscopic Search for Ly α Emission at the End of Reionization III. the Ly α Equivalent-width Distribution and Ionized Structures at $z > 7$*
7. **Jung et al. 2019, ApJ, 877, 146**, *Texas Spectroscopic Search for Ly α Emission at the End of Reionization II. The Deepest Near-infrared Spectroscopic Observation at $z \gtrsim 7$*
8. **Jung et al. 2018, ApJ, 864, 103**, *Texas Spectroscopic Search for Ly α Emission at the End of Reionization I. Constraining the Ly α Equivalent-width Distribution at $6.0 < z < 7.0$*
9. **Jung et al. 2017, ApJ, 834, 81**, *Evidence for reduced specific star formation rates in the centers of massive galaxies at $z = 4$*
10. **Jung et al. 2014, ApJ, 749, 74**, *Effects of Large-scale Environment on the Assembly History of Central Galaxies*
11. S. Peirani, **I. Jung**, J. Silk, and C. Pichon, **2012, MNRAS, 427, 2625**, *Evolution of the baryon fraction in the Local Group: accretion versus feedback at low and high z*

As Contributing Author (incl. 3 accepted & 7 submitted)

1. Stawinski et al. (incl. **I. Jung**) 2024, MNRAS, 528, 5624, *Deeper than DEEP: a spectroscopic survey of $z > 3$ Ly α emitters in the Extended Groth Strip*
2. Napolitano et al. (incl. **I. Jung**) 2024, arXiv:2402.11220, *Peering into cosmic reionization: the Ly α visibility evolution from galaxies at $z = 4.5-8.5$ with JWST*
3. Backhaus et al. (incl. **I. Jung**) 2024, ApJ, 962, 195, *CEERS Key Paper. VIII. Emission-line Ratios from NIRSpect and NIRCams Wide-Field Slitless Spectroscopy at $z > 2$*
4. Hu et al. (incl. **I. Jung**) 2024, arXiv:2401.12402, *Characterizing the Average Interstellar Medium Conditions of Galaxies at $z \sim 5.6-9$ with UV and Optical Nebular Lines*
5. Pirzkal et al. (incl. **I. Jung**) 2023, arXiv:2312.09972, *The Next Generation Deep Extragalactic Exploratory Public Near-Infrared Slitless Survey Epoch 1 (NGDEEP-NISS1): Extra-Galactic Star-formation and Active Galactic Nuclei at $0.5 < z < 3.6$*
6. Finkelstein et al. (incl. **I. Jung**) 2023, arXiv:2311.04279, *The Complete CEERS Early Universe Galaxy Sample: A Surprisingly Slow Evolution of the Space Density of Bright Galaxies at $z \sim 8.5-14.5$*

7. Shen et al. (incl. **I. Jung**) 2023, accepted for ApJL, arXiv:2310.13745, *NGDEEP Epoch 1: Spatially Resolved H α Observations of Disk and Bulge Growth in Star-Forming Galaxies at $z \sim 0.6 - 2.2$ from JWST NIRISS Slitless Spectroscopy*
8. Arrabal Haro et al. (incl. **I. Jung**) 2023, Natur, 622, 707, *Confirmation and refutation of very luminous galaxies in the early Universe*
9. Cooper et al. (incl. **I. Jung**) 2023, arXiv:2309.06656, *The Web Epoch of Reionization Lyman-alpha Survey (WERLS) I. MOSFIRE Spectroscopy of $z \sim 7 - 8$ Lyman-alpha Emitters*
10. Mascia et al. (incl. **I. Jung**) 2023, accepted for A&A, arXiv:2309.02219, *New insight on the nature of cosmic reionizers from the CEERS survey*
11. Bradley et al. (incl. **I. Jung**) 2023, ApJ, 955, 13, *High-redshift Galaxy Candidates at $z = 9-10$ as Revealed by JWST Observations of WHL0137-08*
12. Leung et al. (incl. **I. Jung**) 2023, ApJL, 954, L46, *NGDEEP Epoch 1: The Faint End of the Luminosity Function at $z = 9-12$ from Ultradeep JWST Imaging*
13. Napolitano et al. (incl. **I. Jung**) 2023, A&A, 677, A138, *Identifying Ly α emitter candidates with Random Forest: Learning from galaxies in the CANDELS survey*
14. Larson et al. (incl. **I. Jung**) 2023, ApJL, 953, L29, *A CEERS Discovery of an Accreting Supermassive Black Hole 570 Myr after the Big Bang: Identifying a Progenitor of Massive $z > 6$ Quasars*
15. Arrabal Haro et al. (incl. **I. Jung**) 2023, ApJL, 951, L22, *Spectroscopic Confirmation of CEERS NIRCам-selected Galaxies at $z \simeq 8-10$*
16. Heintz et al. (incl. **I. Jung**) 2023, arXiv:2306.00647, *Extreme damped Lyman-alpha absorption in young star-forming galaxies at $z = 9 - 11$*
17. Yoon et al. (incl. **I. Jung**) 2023, ApJ, 950, 61, *ALMA Observation of a $z \gtrsim 10$ Galaxy Candidate Discovered with JWST*
18. Hsiao et al. (incl. **I. Jung**) 2023, ApJL, 949, L34, *JWST Reveals a Possible $z \sim 11$ Galaxy Merger in Triply Lensed MACS0647-JD*
19. Fujimoto et al. (incl. **I. Jung**) 2023, ApJL, 949, L25, *CEERS Spectroscopic Confirmation of NIRCам-selected $z \gtrsim 8$ Galaxy Candidates with JWST/NIRSpec: Initial Characterization of Their Properties*
20. Hsiao et al. (incl. **I. Jung**) 2023, arXiv:2305.03042, *JWST NIRSpec spectroscopy of the triply-lensed $z = 10.17$ galaxy MACS0647-JD*
21. Simons et al. (incl. **I. Jung**) 2023, ApJS, 266, 13, *CLEAR: Survey Overview, Data Analysis, and Products*
22. Cleri et al. (incl. **I. Jung**) 2023, ApJ, 948, 112, *CLEAR: High-ionization [Ne V] $\lambda 3426$ Emission-line Galaxies at $1.4 < z < 2.3$*
23. Kartaltepe et al. (incl. **I. Jung**) 2023, ApJL, 946, L15, *CEERS Key Paper. III. The Diversity of Galaxy Structure and Morphology at $z = 3 - 9$ with JWST*
24. Abdurro'uf et al. (incl. **I. Jung**) 2023, ApJ, 945, 117, *Spatially Resolved Stellar Populations of $0.3 < z < 6.0$ Galaxies in WHL 0137-08 and MACS 0647+70 Clusters as Revealed by JWST: How Do Galaxies Grow and Quench over Cosmic Time?*
25. Trump et al. (incl. **I. Jung**) 2023, ApJ, 945, 35, *The Physical Conditions of Emission-line Galaxies at Cosmic Dawn from JWST/NIRSpec Spectroscopy in the SMACS 0723 Early Release Observations*
26. Bagley et al. (incl. **I. Jung**) 2023, accepted for ApJS, arXiv:2302.05466, *The Next Generation Deep Extragalactic Exploratory Public (NGDEEP) Survey*
27. Zavala et al. (incl. **I. Jung**) 2023, ApJL, 943, L9, *Dusty Starbursts Masquerading as Ultra-high Redshift Galaxies in JWST CEERS Observations*
28. Backhaus et al. (incl. **I. Jung**) 2023, ApJ, 943, 37, *CLEAR: Spatially Resolved Emission Lines and Active Galactic Nuclei at $0.6 < z < 1.3$*
29. Finkelstein et al. (incl. **I. Jung**) 2022, ApJL, 940, L55, *A Long Time Ago in a Galaxy Far, Far Away: A Candidate $z \sim 12$ Galaxy in Early JWST CEERS Imaging*
30. Welch et al. (incl. **I. Jung**) 2022, ApJL, 940, L1, *JWST Imaging of Earendel, the Extremely Magnified Star at Redshift $z = 6.2$*
31. Papovich et al. (incl. **I. Jung**) 2022, ApJ, 937, 22, *CLEAR: The Ionization and Chemical-enrichment Properties of Galaxies at $1.1 < z < 2.3$*

32. Matharu et al. (incl. **I. Jung**) 2022, ApJ, 937, 16, *CLEAR: The Evolution of Spatially Resolved Star Formation in Galaxies between $0.5 \lesssim z \lesssim 1.7$ Using $H\alpha$ Emission Line Maps*
33. McCarron et al. (incl. **I. Jung**) 2022, ApJ, 936, 131, *Stellar Populations of $Ly\alpha$ -emitting Galaxies in the HETDEX Survey. I. An Analysis of LAEs in the GOODS-N Field*
34. Park et al. (incl. **I. Jung**) 2022, ApJ, 931, 126, *Scattering of $Ly\alpha$ Photons through the Reionizing Intergalactic Medium: I. Spectral Energy Distribution*
35. Larson et al. (incl. **I. Jung**) 2022, ApJ, 930, 104, *Searching for Islands of Reionization: A Potential Ionized Bubble Powered by a Spectroscopic Overdensity at $z = 8.7$*
36. Cleri et al. (incl. **I. Jung**) 2022, ApJ, 929, 3, *CLEAR: Paschen- β Star Formation Rates and Dust Attenuation of Low-redshift Galaxies*
37. Finkelstein et al. (incl. **I. Jung**) 2022, ApJ, 928, 52, *A Census of the Bright $z = 8.5$ -11 Universe with the Hubble and Spitzer Space Telescopes in the CANDELS Fields*
38. Tacchella et al. (incl. **I. Jung**) 2022, ApJ, 927, 170, *On the Stellar Populations of Galaxies at $z = 9$ -11: The Growth of Metals and Stellar Mass at Early Times*
39. Backhaus et al. (incl. **I. Jung**) 2022, ApJ, 926, 161, *CLEAR: Emission-line Ratios at Cosmic High Noon*
40. Simons et al. (incl. **I. Jung**) 2021, ApJ, 923, 203, *CLEAR: The Gas-phase Metallicity Gradients of Star-forming Galaxies at $0.6 < z < 2.6$*
41. Garilli et al. (incl. **I. Jung**) 2021, A&A, 647, A150, *The VANDELS ESO public spectroscopic survey. Final data release of 2087 spectra and spectroscopic measurements*
42. Yang et al. (incl. **I. Jung**) 2021, ApJ, 908, 144, *JWST/MIRI Simulated Imaging: Insights into Obscured Star Formation and AGNs for Distant Galaxies in Deep Surveys*
43. Estrada-Carpenter et al. (incl. **I. Jung**) 2020, ApJ, 898, 171, *CLEAR. II. Evidence for Early Formation of the Most Compact Quiescent Galaxies at High Redshift*
44. Hutchison et al. (incl. **I. Jung**) 2019, ApJ, 879, 70, *Near-infrared Spectroscopy of Galaxies During Reionization: Measuring C III] in a Galaxy at $z = 7.5$*
45. Hong et al. (incl. **I. Jung**) 2019, MNRAS, 483, 3950, *Statistics of two-point correlation and network topology for $Ly\alpha$ emitters at $z \approx 2.67$*
46. Broussard et al. (incl. **I. Jung**) 2019, ApJ, 873, 74, *Star Formation Stochasticity Measured from the Distribution of Burst Indicators*
47. McLure et al. (incl. **I. Jung**) 2018, MNRAS, 479, 25, *The VANDELS ESO public spectroscopic survey*
48. Pentericci et al. (incl. **I. Jung**) 2018, A&A, 616, A174, *The VANDELS ESO public spectroscopic survey: Observations and first data release*
49. Larson et al. (incl. **I. Jung**) 2018, ApJ, 858, 94, *Discovery of a $z = 7.452$ High Equivalent Width $Ly\alpha$ Emitter from the Hubble Space Telescope Faint Infrared Grism Survey*
50. Wang et al. (incl. **I. Jung**) 2016, MNRAS, 459, 1554, *Sussing merger trees: stability and convergence*
51. Lee et al. (incl. **I. Jung**) 2014, MNRAS, 445, 4197, *Sussing merger trees: the impact of halo merger trees on galaxy properties in a semi-analytic model*
52. Srisawat et al. (incl. **I. Jung**) 2013, MNRAS, 436, 150, *Sussing Merger Trees: The Merger Trees Comparison Project*
53. Yi et al. (incl. **I. Jung**) 2013, A&A, 554, A122, *Merger relics of cluster galaxies*

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