

Dr. Yongda Zhu

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RESEARCH INTERESTS

Galaxy formation and evolution; Reionization; Intergalactic medium (IGM); Quasars; Dark Matter

POSITIONS & PROFESSIONAL SERVICE

- Postdoctoral Research Associate (UofA; Mentors: Profs. Marcia & George Rieke) 2024-
 - Member of the JWST NIRCам & MIRI Teams.
 - Analyzing multi-band galaxy imaging data from NIRCам.
 - Leading data reduction of JWST NIRSpec MSA spectra.
- Graduate Student Researcher (UC Riverside) 2019-2024
 - Leading Keck and ALMA observations of the IGM through high-z quasars.
 - Modeling Ly α forest from cosmological simulations.
- Teaching Assistant (UC Riverside) 2018-2019
 - Teaching graduate physics courses.
 - Teaching undergraduate physics lab courses.
- Teaching Assistant (USTC) 2016
 - Teaching computer programming in C language.
- Peer Reviewer: *The Astrophysical Journal*, *Open Research Europe* (European Commission), ALMA proposals, etc.
- Collaborations: JADES (2024-), XQR-30 (2019-).

EDUCATION

- Mar. 2024 Ph.D. in Physics; University of California, Riverside
Constraining the IGM during the Later Stages of Reionization Using QSO Spectra
Advisor: Prof. George Becker
- Dec. 2019 M.Sc. in Physics; University of California, Riverside
- Jun. 2018 B.Sc. in Astronomy; University of Science and Technology of China
Test of Gravity Theories on the Galaxy Scale. Advisor: Prof. Xiao-Bo Dong

SELECTED GRANTS & AWARDS

- NSF | NRAO Student Observing Support Award (\$40k) 2023-
- UCR | HEERF Dissertation Year Program Award (\$7.2k) 2022
- Benjamin C. Shen Memorial Award
for Outstanding Achievement by a First Year Graduate Student Researcher, UCR 2019

- Dean’s Distinguished Fellowship, UCR 2018
- Xingquan Fund Scholarship, USTC 2017
- Outstanding Student Scholarship, USTC 2015, 2017
- student PI, “Properties of Barred Galaxies in Numerical Simulations” Chinese Academy of Sciences (CAS) Innovation Training Programs for Undergraduates (1 yr, CNY 10k) 2017
- First Prize in China Undergraduate Physics Tournament (USTC Competition Area). 2016
- student PI, “Testing Gravity Theories on the Galactic Scale” 2015-2017
 - National Natural Science Foundation of China (NSFC) for Fostering Talented Students in Basic Sciences (2 yr, CNY 20k)
 - Chinese Academy of Sciences (CAS) Innovation Training Programs for Undergraduates (1 yr, CNY 10k)

OBSERVING EXPERIENCE & PROPOSAL INVOLVEMENT *PI/leading person[†]

Selected projects:

- *ALMA - Cycle 11 – *Galaxy over/under-densities around IGM transmission at $z=5.7$: a robust constraint on reionization*
- *MMT-6.5m/Binospec IFU - 2024B – *Ionization and Enrichment in the Reionization Epoch: A Pilot Study with Binospec IFU*
- *ALMA - Cycle 9 – *The Mean Free Path of Ionizing Photons at $z = 5.6$: A Robust Constraint on Reionization*
- JWST/NIRCam WFSS - Cycle 2 (PI: Becker): *How Does Reionization End? A Search for [O III] Emitters in the Most Transparent Regions of the IGM Near Redshift Six*
- [†]Keck/ESI: [2021B_U036, 2022A_U035, 2022B_U042, 2023B_U049, 2023B_U049, 2024A_U281] *The Mean Free Path at $z = 5.6$: Insights into Ultra-Late Reionization*

Selected previous allocation:

- Keck/ESI: [2019A_U014, 2020A_U121, 2021A_U039] *Giant Ly α Troughs at $z < 6$: A Signature of Very Late Reionization?* (PI: Becker) **Zhu, Y.**, et al. 2021, ApJ, 923, 223; **Zhu, Y.** et al. 2022, ApJ, 932, 76.
- Keck/LRIS [2019A_U147, 2019B_U147] *The Mean Free Path at $z = 5$: A Key Constraint on Reionization Models* (PI: Becker) Becker, G. D., et al. 2021; **Zhu, Y.** et al. 2023, ApJ, 955, 115

Other allocation includes Keck/ESI [2021A, 2021B], Keck/DEIMOS [2020A], Keck/LRIS [2023B], Subaru/HSC [2020B, 2021A, 2021B, 2023B], etc.

[†] The PI of Keck proposals cannot be a UC student.

SELECTED INVITED TALKS / CONFERENCE / SEMINAR

- Lyman-alpha forest workshop, OSU Oct, 2024
- JWST MIRI Science Meeting, Biosphere2 Oct, 2024
- The First Gigayear(s), Hilo Sep, 2024
- JADES Collaboration Meeting, Copenhagen Apr, 2024
- Steward / NOIRLab Galaxy Group Talk, UArizona Mar. 2024
- Galaxy Seminar Talk, University of Michigan Nov, 2023
- Galaxy Formation and Evolution in Southern California - GalFRESKA 2023 Sep, 2023
- Special Kashiwa-Mitaka Meeting (KMM) Seminar, University of Tokyo Aug, 2023
- Lightning talk at First Light Conference, MIT Jun, 2023
- Reionisation in the Summer Conference, MPA, Heidelberg Jun, 2023
- Talk at Northwestern/CIERA Galaxy Formation Group Dec, 2022
- Friday Lunch Time Astrophysics Seminar, UC Santa Cruz Nov, 2022
- Astronomy Lunch Talk, UC Los Angeles Oct, 2022
- Astro Lunch Talk, UC Santa Barbara Sep, 2022
- Reionization on a Blackboard Workshop, CCA Sep, 2022
- Special arXiv Coffee Meeting, UC Davis May 2022
- Physics & Astronomy Student Seminar, UC Riverside Apr. 2022
- Talk at Tsinghua High-z Group, Tsinghua University Apr. 2022
- Reionization and Cosmic Dawn: Looking Forward To the Past, UC Berkeley Mar. 2022
- European Astronomical Annual Meeting (EAS2021) Jul. 2021
- Summer All Zoom Epoch of Reionization Astronomy Conference (SAZERAC2) Jun. 2021
- EURECA seminar (ft. G. Becker, H. Christenson), University of Arizona Feb. 2021

MENTORING

- Undergraduate student mentored: Ms. G. Hernandez (UC Riverside) 2021
- Project: Measuring the redshift evolution of the IGM effective optical depth.
- Graduate students (co-)mentored:
 - Ms. H.-X. Ma (PhD student at Nagoya University, Japan)
Project: *Density-based clustering algorithm for galaxy group/cluster identification*
 - Mr. Seyedazim Hashemi (PhD student at UC Riverside)
Project: *Lyman-alpha visibility during the epoch of reionization*

- UCR International Students & Scholar Office:
14 international mentees from diverse backgrounds 2021-
- Graduate Student Mentorship Program: 2020
 - Dr. N Ahvazi (recently finished her PhD in Physics; dark matter and galaxies)
 - Mr. Q Wu (now pursuing his PhD in Physics; 2D materials)

SERVICE & PUBLIC OUTREACH

- Stargazing outreach events at Home Gardens Library, Corona, CA Oct. 2023
- Co-organizer: UCR Physics & Astronomy Student Seminar 2022-
- UCR Camp Highlander instructor Summer 2022
- Outreach courses designed for K-12 students: 2022
 - *Multiwavelength Universe*
 - *Gravity Simulator*
- Virtual Stargazing (UCR & Riverside Astronomical Society)
monthly live public outreach on Youtube 2020-2021
- Serving for the Riverside County Science and Engineering Fair as judge 2021-
- UCR Astronomy Public Outreach: Mercury Transit Nov. 2019

TECHNICAL PROFICIENCIES

Programming C(and some C++), Python, Julia, GDL/IDL, CUDA
 Software CASA, Gadget-2, GALAXY, FreeFem++, etc.
 Hardware Raspberry Pi, Arduino
 Languages English, Chinese (native)

YONGDA ZHU - PUBLICATION LIST

ORCID: [0000-0003-3307-7525](https://orcid.org/0000-0003-3307-7525)

ADS link: <https://ui.adsabs.harvard.edu/search/q=orcid%3A0000-0003-3307-7525>

Google Scholar: <https://scholar.google.com/citations?user=wDrSZWYAAAAJ>

As of November 2024: > 1000 citations | *h*-index: 18

Research Interest Score is higher than **99%** of ResearchGate members who first published in 2021.

First-author:

8. **Zhu, Y.**, Bakx, T. J. L. C., Ikeda, R., Umehata, H., Becker, G. D., Cain, C., Champagne, J. B., Fan, X., Fudamoto, Y., Jin, X., Ma, H.-X., Sun, Y., Takeuchi, T. T., and Tee, W. L., 2024. Discovery of a Unique Close Quasar-DSFG Pair Linked by a [C II] Bridge at $z = 5.63$, arXiv e-prints, [arXiv:2411.06698](https://arxiv.org/abs/2411.06698).
7. **Zhu, Y.**, Alberts, S., Lyu, J., Morrison, J., Rieke, G. H., Sun, Y., Helton, J. M., Ji, Z., Bhatawdekar, R., Bonaventura, N., Bunker, A. J., Lin, X., Rieke, M. J., Rinaldi, P., Shivaeei,

- I., Willmer, C. N. A., and Zhang, J., 2024. SMILES: Discovery of Higher Ionizing Photon Production Efficiency in Overdense Regions, arXiv e-prints, [arXiv:2410.14804](https://arxiv.org/abs/2410.14804).
6. **Zhu, Y.**, Rieke, M. J., Ji, Z., Simmonds, C., Sun, F., Sun, Y., Alberts, S., Bhatawdekar, R., Bunker, A. J., Cargile, P. A., Carniani, S., de Graaff, A., Hainline, K., Helton, J. M., Jones, G. C., Lyu, J., Rieke, G. H., Rinaldi, P., Robertson, B., Scholtz, J., Übler, H., Williams, C. C., and Willmer, C. N. A., 2024. A Systematic Search for Galaxies with Extended Emission Line and Potential Outflows in JADES Medium-Band Images, arXiv e-prints, [arXiv:2409.11464](https://arxiv.org/abs/2409.11464).
 5. **Zhu, Y.**, Becker, G.D., Bosman, S. E. I., Cain, C., Keating, L. C., Nasir, F., D’Odorico, V., Bañados, E., Bian, F., Bischetti, M., Bolton, J. S., Chen, H., D’Aloisio, A., Davies, F. B., Davies, R. L., Eilers, A.-C., Fan, X., Gaikwad, P., Greig, B., Haehnelt, M. G., Kulkarni, G., Lai, S., Puchwein, E., Qin, Y., Ryan-Weber, E. V., Satyavolu, S., Spina, B., Walter, F., Wang, F., Wolfson, M., and Yang, J., 2024. Damping Wing-Like Features in the Stacked Ly α Forest: Potential Neutral Hydrogen Islands at $z < 6$. *Monthly Notices of the Royal Astronomical Society: Letters*, 533, L49
Link to the preprint — doi: [10.5281/zenodo.10202616](https://doi.org/10.5281/zenodo.10202616) (**22 citations**).
 4. **Zhu, Y.**, Becker, G.D., Christenson, H.M., D’Aloisio, A., Bosman, S.E.I., Bakx, T., D’Odorico, V., Bischetti, M., Cain, C., Davies, F.B., Davies, R.L., Eilers, A.-C., Fan, X., Gaikwad, P., Haehnelt, M.G., Keating, L.C., Kulkarni, G., Lai, S., Ma, H.-X., Mesinger, A., Qin, Y., Satyavolu, S., Takeuchi, T.T., Umehata, H., and Yang, J., 2023. Probing Ultra-late Reionization: Direct Measurements of the Mean Free Path over $5 < z < 6$. *The Astrophysical Journal*, 955, 115. (**39 citations**).
 3. **Zhu, Y.**, Ma, H.-X. (co-first author), Dong, X.-B., Huang, Y., Mistele, T., Peng, B., Long, Q., Wang T., Chang L., and Jin X., 2023. How Close Dark Matter Halos and MOND Are to Each Other: Three-Dimensional Tests Based on Gaia DR2. *Monthly Notices of the Royal Astronomical Society*, 519, 4479. (**13 citations**).
 2. **Zhu, Y.**, Becker G.D., Bosman S.E.I., Keating L.C., D’Odorico V., Davies R.L., Christenson H.M., Bañados E., Bian F., Bischetti M., Chen H., Davies F.B., Eilers A.-C., Fan X., Gaikwad P., Greig B., Haehnelt M.G., Kulkarni G., Lai S., Pallottini A., Qin Y., Ryan-Weber E.V., Walter F., Wang F., and Yang J., 2022. Long Dark Gaps in the Ly β Forest at $z < 6$: Evidence of Ultra Late Reionization from XQR-30 Spectra. *The Astrophysical Journal*, 932 76. (**71 citations**).
- Highlighted by AASnova & Astrobites**
1. **Zhu, Y.**, Becker, G.D., Bosman, S.E.I., Keating, L.C., Christenson, H.M., Bañados, E., Bian, F., Davies, F.B., D’Odorico, V., Eilers, A.-C., Fan, X., Haehnelt, M.G., Kulkarni, G., Pallottini, A., Qin, Y., Wang, F., Yang, J., 2021. Chasing the Tail of Cosmic Reionization with Dark Gap Statistics in the Ly α Forest over $5 < z < 6$. *The Astrophysical Journal* 923, 223. (**73 citations**).

Co-author:

35. Hainline, K. N., Maiolino, R., Juodzbali, I., Scholtz, J., Ubler, H., D’Eugenio, F., Helton, J. M., Sun, Y., Sun, F., Robertson, B., Tacchella, S., Bunker, A. J., Carniani, S., Charlot, S., Curtis-Lake, E., Egami, E., Johnson, B. D., Lin, X., Lyu, J., Perez-Gonzalez, P. G., Rinaldi, P., Silcock, M. S., Williams, C. C., Willmer, C. N. A., Willott, C., Zhang, J., and **Zhu, Y.**,

2024. An Investigation Into The Selection and Colors of Little Red Dots and Active Galactic Nuclei, arXiv e-prints, arXiv:2410.00100.
34. Ji, Z., Williams, C. C., Rieke, G. H., Lyu, J., Alberts, S., Sun, F., Helton, J. M., Rieke, M., Shivaei, I., D'Eugenio, F., Tacchella, S., Robertson, B., **Zhu, Y.**, Maiolino, R., Bunker, A. J., Sun, Y., and Willmer, C. N. A., 2024. Extended hot dust emission around the earliest massive quiescent galaxy, arXiv e-prints, arXiv:2409.17233.
 33. Sun, Y., Lyu, J., Rieke, G. H., Ji, Z., Sun, F., **Zhu, Y.**, Bunker, A. J., Cargile, P. A., Circosta, C., D'Eugenio, F., Egami, E., Hainline, K., Helton, J. M., Rinaldi, P., Robertson, B. E., Scholtz, J., Shivaei, I., Stone, M. A., Tacchella, S., Williams, C. C., Willmer, C. N. A., and Willott, C., 2024. No evidence for a significant evolution of M_{\bullet} - M_* relation up to $z \sim 4$, arXiv e-prints, arXiv:2409.06796.
 32. Jones, G. C., Bunker, A. J., Saxena, A., Arribas, S., Bhatawdekar, R., Boyett, K., Carniani, S., Charlot, S., Curtis-Lake, E., Hainline, K., Johnson, B. D., Kumari, N., Maseda, M. V., Rix, H.-W., Robertson, B. E., Tacchella, S., Übler, H., Williams, C. C., Willott, C., Witstok, J., and **Zhu, Y.**, 2024. JADES: Measuring reionization properties using Lyman-alpha emission, arXiv e-prints, arXiv:2409.06405.
 31. Simmonds, C., Tacchella, S., Hainline, K., Johnson, B. D., Puskás, D., Robertson, B., Baker, W. M., Bhatawdekar, R., Boyett, K., Bunker, A. J., Cargile, P. A., Carniani, S., Chevallard, J., Curti, M., Curtis-Lake, E., Ji, Z., Jones, G. C., Kumari, N., Laseter, I., Maiolino, R., Maseda, M. V., Rinaldi, P., Stoffers, A., Übler, H., Villanueva, N. C., Williams, C. C., Willot, C., Witstok, J., and **Zhu, Y.**, 2024. Ionising properties of galaxies in JADES for a stellar mass complete sample: resolving the cosmic ionising photon budget crisis at the Epoch of Reionisation, arXiv e-prints, arXiv:2409.01286.
 30. Witstok, J., Jakobsen, P., Maiolino, R., Helton, J. M., Johnson, B. D., Robertson, B. E., Tacchella, S., Cameron, A. J., Smit, R., Bunker, A. J., Saxena, A., Sun, F., Arribas, S., Baker, W. M., Bhatawdekar, R., Boyett, K., Cargile, P. A., Carniani, S., Charlot, S., Chevallard, J., Curti, M., Curtis-Lake, E., D'Eugenio, F., Eisenstein, D. J., Hainline, K. N., Jones, G. C., Kumari, N., Maseda, M. V., Pérez-González, P. G., Rinaldi, P., Scholtz, J., Übler, H., Williams, C. C., Willmer, C. N. A., Willott, C., and **Zhu, Y.**, 2024. Witnessing the onset of Reionisation via Lyman- α emission at redshift 13, arXiv e-prints, arXiv:2408.16608.
 29. Jiang, D., Onoue, M., Jiang, L., Lai, S., Bañados, E., Bosman, S. E. I., Davies, R. L., D'Odorico, V., Farina, E. P., Haenelt, M. G., Mazzucchelli, C., Schindler, J.-T., Walter, F., **Zhu, Y.**, 2023. No Redshift Evolution in Fe II/Mg II Flux Ratios of Quasars across Cosmic Time, accepted by ApJ
 28. Wolfson, M., Hennawi, J. F., Bosman, S. E. I., Davies, F. B., Lukić, Z., Becker, G. D., Chen, H., Cupani, G., D'Odorico, V., Eilers, A.-C., Haehnelt, M. G., Keating, L. C., Kulkarni, G., Lai, S., Mesinger, A., Walter, F., and **Zhu, Y.**, 2024. Measurements of the $z \lesssim 5$ Lyman- α forest flux autocorrelation functions from the extended XQR-30 data set, Monthly Notices of the Royal Astronomical Society, 531, 3069.
 27. Roth, J. T., D'Aloisio, A., Cain, C., Wilson, B., **Zhu, Y.**, and Becker, G. D., 2024. The effect of reionization on direct measurements of the mean free path, Monthly Notices of the Royal Astronomical Society, 530, 5209.

26. Stone, M. A., Alberts, S., Rieke, G. H., Bunker, A. J., Lyu, J., Pérez-González, P. G., Shivaei, I., and **Zhu, Y.**, 2024. 5-25 μm Galaxy Number Counts from Deep JWST Data, arXiv e-prints, arXiv:2405.18470.
25. Helton, J. M., Rieke, G. H., Alberts, S., Wu, Z., Eisenstein, D. J., Hainline, K. N., Carniani, S., Ji, Z., Baker, W. M., Bhatawdekar, R., Bunker, A. J., Cargile, P. A., Charlot, S., Chevallard, J., D'Eugenio, F., Egami, E., Johnson, B. D., Jones, G. C., Lyu, J., Maiolino, R., Pérez-González, P. G., Rieke, M. J., Robertson, B., Saxena, A., Scholtz, J., Shivaei, I., Sun, F., Tacchella, S., Whitler, L., Williams, C. C., Willmer, C. N. A., Willott, C., Witstok, J., and **Zhu, Y.**, 2024. JWST/MIRI photometric detection at 7.7 μm of the stellar continuum and nebular emission in a galaxy at $z > 14$, arXiv e-prints, arXiv:2405.18462.
24. Alberts, S., Lyu, J., Shivaei, I., Rieke, G. H., Perez-Gonzalez, P. G., Bonventura, N., **Zhu, Y.**, Helton, J. M., Ji, Z., Morrison, J., Robertson, B. E., Stone, M. A., Sun, Y., Williams, C. C., and Willmer, C. N. A., 2024. SMILES Initial Data Release: Unveiling the Obscured Universe with MIRI Multi-band Imaging, arXiv e-prints, arXiv:2405.15972.
23. Spina, B., Bosman, S. E. I., Davies, F. B., Gaikwad, P., and **Zhu, Y.**, 2024. Damping wings in the Lyman- α forest: a model-independent measurement of the neutral fraction at 5.4 $\leq z \leq 6.1$, arXiv e-prints, arXiv:2405.12273.
22. Ma, H.-X., Takeuchi, T. T., Cooray, S., and **Zhu, Y.**, 2024. Density-based clustering algorithm for galaxy group/cluster identification, arXiv e-prints, arXiv:2405.09855.
21. Becker, G. D., Bolton, J. S., **Zhu, Y.**, and Hashemi, S., 2024. Damping wing absorption associated with a giant Ly α trough at $z < 6$: direct evidence for late-ending reionization, arXiv e-prints, arXiv:2405.08885.
20. Greig, B., Mesinger, A., Bañados, E., Becker, G. D., Bosman, S. E. I., Chen, H., Davies, F. B., D'Odorico, V., Eilers, A.-C., Gallerani, S., Haehnelt, M. G., Keating, L., Lai, S., Qin, Y., Ryan-Weber, E., Satyavolu, S., Wang, F., Yang, J., and **Zhu, Y.**, 2024. IGM damping wing constraints on the tail end of reionization from the enlarged XQR-30 sample, Monthly Notices of the Royal Astronomical Society, 530, 3208.
19. Bischetti, M., Choi, H., Fiore, F., Feruglio, C., Carniani, S., D'Odorico, V., Bañados, E., Chen, H., Decarli, R., Gallerani, S., Hlavacek-Larrondo, J., Lai, S., Leighly, K. M., Maz-zucchelli, C., Perreault-Levasseur, L., Tripodi, R., Walter, F., Wang, F., Yang, J., Vittoria Zanchettin, M., and **Zhu, Y.**, 2024. Multi-phase black-hole feedback and a bright [CII] halo in a Lo-BAL quasar at $z \sim 6.6$, arXiv e-prints, arXiv:2404.12443.
18. Fudamoto, Y., Sun, F., Diego, J. M., Dai, L., Oguri, M., Zitrin, A., Zackrisson, E., Jauzac, M., Lagattuta, D. J., Egami, E., Iani, E., Windhorst, R. A., Abe, K. T., Bauer, F. E., Bian, F., Bhatawdekar, R., Broadhurst, T. J., Cai, Z., Chen, C.-C., Chen, W., Cohen, S. H., Con-selice, C. J., Espada, D., Foo, N., Frye, B. L., Fujimoto, S., Furtak, L. J., Golubchik, M., Hsiao, T. Y.-Y., Jolly, J.-B., Kawai, H., Kelly, P. L., Koekemoer, A. M., Kohno, K., Kokorev, V., Li, M., Li, Z., Lin, X., Magdis, G. E., Meena, A. K., Nabizadeh, A., Richard, J., Stein-hardt, C. L., Wu, Y., **Zhu, Y.**, and Zou, S., 2024. JWST Discovery of 40+ Microlensed Stars in a Magnified Galaxy, the "Dragon" behind Abell 370, arXiv e-prints, arXiv:2404.08045.
17. D'Eugenio, F., Cameron, A. J., Scholtz, J., Carniani, S., Willott, C. J., Curtis-Lake, E., Bunker, A. J., Parlanti, E., Maiolino, R., Willmer, C. N. A., Jakobsen, P., Robertson, B. E.,

- Johnson, B. D., Tacchella, S., Cargile, P. A., Rawle, T., Arribas, S., Chevallard, J., Curti, M., Egami, E., Eisenstein, D. J., Kumari, N., Looser, T. J., Rieke, M. J., Rodríguez Del Pino, B., Saxena, A., Übler, H., Venturi, G., Witstok, J., Baker, W. M., Bhatawdekar, R., Bonaventura, N., Boyett, K., Charlot, S., Danhaive, A. L., Hainline, K. N., Hausen, R., Helton, J. M., Ji, X., Ji, Z., Jones, G. C., Joudžbalis, I., Maseda, M. V., Pérez-González, P. G., Perna, M., Puskás, D., Shivaie, I., Silcock, M. S., Simmonds, C., Smit, R., Sun, F., Villanueva, N. C., Williams, C. C., and **Zhu, Y.**, 2024. JADES Data Release 3 – NIRSpec/MSA spectroscopy for 4,000 galaxies in the GOODS fields, arXiv e-prints, arXiv:2404.06531.
16. Davies, F. B., Bosman, S. E. I., Gaikwad, P., Nasir, F., Hennawi, J. F., Becker, G. D., Haehnelt, M. G., D’Odorico, V., Bischetti, M., Eilers, A.-C., Keating, L. C., Kulkarni, G., Lai, S., Mazzucchelli, C., Qin, Y., Satyavolu, S., Wang, F., Yang, J., and **Zhu, Y.**, 2024. Constraints on the Evolution of the Ionizing Background and Ionizing Photon Mean Free Path at the End of Reionization, *The Astrophysical Journal*, 965, 134.
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