

Aaron J. Barth

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Appointments

University of California, Irvine:	
Professor	2012 – present
Associate Professor	2009 – 2012
Assistant Professor	2004 – 2009
Hubble Fellow, California Institute of Technology	2001 – 2004
CfA Postdoctoral Fellow, Harvard-Smithsonian Center for Astrophysics	1998 – 2001

Education

Ph.D. in Astronomy, University of California, Berkeley	1998
M.S. in Physics, University of Chicago	1992
B.S. in Physics, <i>summa cum laude</i> , Yale University	1990

Research Interests

- Supermassive black holes in nearby galaxies
- Active galactic nuclei and quasars
- AGN variability and reverberation mapping
- Intermediate-mass black holes
- Low-luminosity active galactic nuclei
- Structure, morphology, and dynamics of galaxies

Awards and Honors

Outstanding Contributions to Undergraduate Education, UCI Department of Physics & Astronomy	2018
NSF Faculty Early Career Development (CAREER) Award	2006–2011
Hubble Fellowship	2001–2004
Dorothea Klumpke-Roberts Prize, UC Berkeley Department of Astronomy	1996
Phi Beta Kappa, Yale University	1990
Eastman Kodak Scholarship, Yale University	1988–1990
American Honda Foundation Scholarship, Yale University	1986–1987

Memberships

- American Astronomical Society
- International Astronomical Union
- American Association for the Advancement of Science

Selected Service Activities

W. M. Keck Observatory Science Steering Committee, Co-Chair	2020–2023
W. M. Keck Observatory Science Steering Committee, Member	2016–2020
UC Observatories Advisory Committee, Member (ex-officio)	2016–2023
UC Observatories Advisory Committee, Chair	2012–2016
UC Irvine Department of Physics and Astronomy, Vice Chair of Planning	2021–present
Cal-Bridge and CAMPARE Faculty Mentor	2015–present
UC Irvine Council on Research, Computing, and Libraries, Member	2015–2021
James Webb Space Telescope Cycle 2 Proposal Review, Panel Member	2023
James Webb Space Telescope Cycle 1 Proposal Review, Panel Member	2021
Hubble Space Telescope Cycle 27 Proposal Review, Panel Chair	2019
Hubble Space Telescope Cycle 23 Proposal Review, Panel Member	2015
Hubble Space Telescope Cycle 19 Proposal Review, Panel Member	2011
Hubble Space Telescope Cycle 17 Proposal Review, Panel Member	2008
Hubble Space Telescope Cycle 14 Proposal Review, Panel Member	2005
Hubble Space Telescope Cycle 11 Proposal Review, Panel Member	2001
Chandra X-ray Observatory Cycle 19 Proposal Review, Panel Chair	2017
Chandra X-ray Observatory Cycle 16 Proposal Review, Panel Member	2014
Chandra X-ray Observatory Cycle 9 Proposal Review, Panel Member	2007
Las Cumbres Observatory Time Allocation Committee	2011–2014
University of California Keck Observatory Time Allocation Committee	2005–2011

Aaron J. Barth: Publications

Links to publications: [\[NASA Astrophysics Data System\]](#) [\[orcid.org\]](#) [\[Google Scholar\]](#)

Refereed Publications

212. “Fast Outflow in the Host Galaxy of the Luminous $z = 7.5$ Quasar J1007+2115.” W. Liu, X. Fan, J. Yang, E. Bañados, F. Wang, J. Wolf, A. J. Barth, *et al.* 2024, accepted for publication in *The Astrophysical Journal*.
211. “AGN STORM 2. VII. A Frequency-resolved Map of the Accretion Disk in Mrk 817: Simultaneous X-ray Reverberation and UVOIR Disk Reprocessing Time Lags.” C. Lewin, E. Kara, A. J. Barth, E. M. Cackett, *et al.* 2024, accepted for publication in *The Astrophysical Journal*. [[arXiv:2409.09115](#)]
210. “Modeling ALMA Observations of the Warped Molecular Gas Disk in the Red Nugget Relic Galaxy NGC 384.” J. H. Cohn, M. Curliss, J. L. Walsh, K. M. Kabasares, B. D. Boizelle, A. J. Barth, K. Gebhardt, K. Gültekin, D. A. Buote, J. Darling, A. J. Baker, & L. C. Ho. 2024, accepted for publication in *The Astrophysical Journal*. [[arXiv:2409.08812](#)]
209. “A Spectroscopic survey of biased halos In the Reionization Era (ASPIRE): Broad-line AGN at $z=4-5$ revealed by JWST/NIRCam WFSS.” X. Lin *et al.* 2024, *The Astrophysical Journal*, 974:147. [doi:[10.3847/1538-4357/ad6565](#)]
208. “AGN STORM 2: IX. Studying the Dynamics of the Ionized Obscurer in Mrk 817 with High-resolution X-ray Spectroscopy.” F. Zaidouni *et al.* 2024, *The Astrophysical Journal*, 974:91. [doi:[10.3847/1538-4357/ad6771](#)]
207. “AGN STORM 2: VIII. Investigating the Narrow Absorption Lines in Mrk 817 Using HST-COS Observations.” M. Dehghanian *et al.* 2024, *The Astrophysical Journal*, 972:141. [doi:[10.3847/1538-4357/ad5ff4](#)]
206. “Circumnuclear Dust in Early-Type Galaxies - I. Sample Properties and Stellar Luminosity Models.” J. R. Davidson, B. D. Boizelle, J. L. Walsh, A. J. Barth, E. Rasmussen, A. J. Baker, D. A. Buote, J. Darling, L. C. Ho, K. M. Kabasares, & J. H. Cohn. 2024, *The Astrophysical Journal*, 972:127. [doi:[10.3847/1538-4357/ad5be4](#)]
205. “A Spatially Resolved [C II] Survey of 31 $z \sim 7$ Massive Galaxies Hosting Luminous Quasars.” F. Wang *et al.* 2024, *The Astrophysical Journal*, 968:9 [doi:[10.3847/1538-4357/ad3fb4](#)]
204. “Gas-dynamical Mass Measurements of the Supermassive Black Holes in the Early-Type Galaxies NGC 4786 and NGC 5193 from ALMA and HST Observations.” K. M. Kabasares, J. H. Cohn, A. J. Barth, B. D. Boizelle, J. Davidson, J. M. Sy, J. Flores-Velázquez, S. C. Delgado Andrade, D. A. Buote, J. L. Walsh, A. J. Baker, J. Darling, L. C. Ho. 2024, *The Astrophysical Journal*, 966:132 [doi:[10.3847/1538-4357/ad2f36](#)]
203. “Empirical Models of the $H\beta$ Broad Emission Line Gas Density Field.” L. Villafaña, T. Treu, L. Colley, B. J. Brewer, A. J. Barth, M. A. Malkan, V. U, & V. N. Bennert. 2024, *The Astrophysical Journal*, 966:106 [doi:[10.3847/1538-4357/ad35cb](#)]
202. “The first spectroscopic IR reverberation programme on Mrk 509.” J. A. J. Mitchell, M. J. Ward, D. Kynoch, J. V. Hernández Santisteban, K. Horne, J. U. Pott, J. Esser, P. Mercatoris, C. Packham, G. J. Ferland, A. Lawrence, T. Fischer, A. J. Barth, C. Villforth, & H. Winkler. 2024, *Monthly Notices of the Royal Astronomical Society*, 529, 4824. [doi:[10.1093/mnras/stae790](#)]
201. “Intensive Swift and LCO monitoring of PG 1302–102: AGN disk reverberation mapping of a supermassive black hole binary candidate.” T. Liu, R. Edelson, J. V. Hernández Santisteban, E. Kara, J. Montano, J. Gelbord, K. Horne, A. J. Barth, E. M. Cackett, D. L. Kaplan. 2024, *The Astrophysical Journal*, 964:167. [doi:[10.3847/1538-4357/ad23e2](#)]
200. “AGN STORM 2: V. Anomalous Behavior of the CIV Light Curve in Mrk 817.” Y. Homayouni *et al.* 2024, *The Astrophysical Journal*, 963:123. [doi:[10.3847/1538-4357/ad1be4](#)]
199. “The Seoul National University AGN Monitoring Project III: $H\beta$ lag measurements of 32 luminous AGNs and the high-luminosity end of the size–luminosity relation.” J.-H. Woo *et al.* 2024, *The Astrophysical Journal*, 962:67. [doi:[10.3847/1538-4357/ad132f](#)]
198. “AGN STORM 2. VI. Mapping Temperature Fluctuations in the Accretion Disk of Mrk 817.” J. M. M. Neustadt, C. S. Kochanek, J. Montano, J. Gelbord, A. J. Barth, *et al.* 2024, *The Astrophysical Journal*, 961:219. [doi:[10.3847/1538-4357/ad1386](#)]

197. “AGN STORM 2. IV. Swift X-ray and ultraviolet/optical monitoring of Mrk 817.” E. M. Cackett, J. Gelbord, A. J. Barth, G. De Rosa, R. Edelson, M. R. Goad, Y. Homayouni, K. Horne, E. A. Kara, G. A. Kriss, *et al.* 2023, *The Astrophysical Journal*, 958: 195. [doi:[10.3847/1538-4357/acfdac](https://doi.org/10.3847/1538-4357/acfdac)]
196. “ALMA gas-dynamical mass measurement of the supermassive black hole in the red nugget relic galaxy PGC 11179.” J. H. Cohn, M. Curliss, J. L. Walsh, K. M. Kabasares, B. D. Boizelle, A. J. Barth, K. Gebhardt, K. Gültekin, A. Yıldırım, D. Buote, J. Darling, A. J. Baker, & L. Ho. 2023, *The Astrophysical Journal*, 958:186. [doi:[10.3847/1538-4357/ad029d](https://doi.org/10.3847/1538-4357/ad029d)]
195. “The Seoul National University AGN Monitoring Project IV: H α reverberation mapping of 6 AGNs and the H α Size-Luminosity Relation.” H. Cho *et al.* 2023, *The Astrophysical Journal*, 953:142. [doi:[10.3847/1538-4357/ace1e5](https://doi.org/10.3847/1538-4357/ace1e5)]
194. “Continuum Reverberation Mapping of Mrk 876 Over Three Years With Remote Robotic Observatories.” J. A. Miller, E. M. Cackett, M. R. Goad, K. Horne, A. J. Barth, E. Romero-Colmenero, M. Fausnaugh, J. Gelbord, K. T. Korista, H. Landt, T. Treu, & H. Winkler. 2023, *The Astrophysical Journal*, 953:137. [doi:[10.3847/1538-4357/ace342](https://doi.org/10.3847/1538-4357/ace342)]
193. “A SPECTROSCOPIC SURVEY OF BIASED HALOS IN THE REIONIZATION ERA (ASPIRE): JWST REVEALS A FILAMENTARY STRUCTURE AROUND A $z=6.61$ QUASAR.” F. Wang *et al.* 2023, *The Astrophysical Journal Letters*, 951:L4. [doi:[10.3847/2041-8213/accd6f](https://doi.org/10.3847/2041-8213/accd6f)]
192. “A SPECTROSCOPIC SURVEY OF BIASED HALOS IN THE REIONIZATION ERA (ASPIRE): A FIRST LOOK AT THE REST-FRAME OPTICAL SPECTRA OF $z>6.5$ QUASARS USING JWST.” J. Yang *et al.* 2023, *The Astrophysical Journal Letters*, 951:L5. [doi:[10.3847/2041-8213/acc9c8](https://doi.org/10.3847/2041-8213/acc9c8)]
191. “What Does the Geometry of the H β BLR Depend On?” L. Villafaña, P. R. Williams, T. Treu, B. J. Brewer, A. J. Barth, V. U., *et al.* 2023, *The Astrophysical Journal*, 948:95. [doi:[10.3847/1538-4357/acc84](https://doi.org/10.3847/1538-4357/acc84)]
190. “AGN STORM 2: II. Ultraviolet Observations of Mrk817 with the Cosmic Origins Spectrograph on the Hubble Space Telescope.” Y. Homayouni, G. De Rosa, R. Plesha, G. A. Kriss, A. J. Barth, E. M. Cackett, *et al.* 2023, *The Astrophysical Journal*, 948:85. [doi:[10.3847/1538-4357/acc45a](https://doi.org/10.3847/1538-4357/acc45a)]
189. “UV/OPTICAL DISK REVERBERATION LAGS DESPITE A FAINT X-RAY CORONA IN THE AGN MRK 335.” E. Kara, A. J. Barth, E. M. Cackett, *et al.* 2023, *The Astrophysical Journal*, 947:62. [doi:[10.3847/1538-4357/acbcd3](https://doi.org/10.3847/1538-4357/acbcd3)]
188. “AGN STORM 2. III. A NICER VIEW OF THE VARIABLE X-RAY OBSCURER IN MRK 817.” E. R. Partington, E. M. Cackett, E. Kara, G. A. Kriss, A. J. Barth, *et al.* 2023, *The Astrophysical Journal*, 947:2. [doi:[10.3847/1538-4357/acbf44](https://doi.org/10.3847/1538-4357/acbf44)]
187. “Dust Reverberation Mapping and Light-Curve Modelling of Zw229-015.” E. Guise, S. F. Hönic, V. Gorjian, A. J. Barth, T. Almeyda, L. Pei, S. B. Cenko, R. Edelson, A. V. Filippenko, M. D. Joner, C. D. Laney, W. Li, M. A. Malkan, M. L. Nguyen, & W. Zheng. 2022, *MNRAS*, 515, 2890. [doi:[10.1093/mnras/stac2529](https://doi.org/10.1093/mnras/stac2529)]
186. “Active Galactic Nuclei Continuum Reverberation Mapping Based on Zwicky Transient Facility Light Curves.” H. Guo, A. J. Barth, & S. Wang. 2022, *The Astrophysical Journal*, 940:20. [doi:[10.3847/1538-4357/ac96ec](https://doi.org/10.3847/1538-4357/ac96ec)]
185. “Revisiting the Continuum Reverberation Lags in the AGN PKS 0558-504.” D. H. González-Buitrago, J. V. Hernández Santisteban, A. J. Barth, E. Jimenez-Bailón, Y.-R. Li, Ma. T. García-Díaz, A. Lopez Vargas, M. Herrera-Endoqui. 2022, *Monthly Notices of the Royal Astronomical Society*, 515, 2890. [doi:[10.1093/mnras/stac1945](https://doi.org/10.1093/mnras/stac1945)]
184. “Optical Continuum Reverberation in the Dwarf Seyfert Nucleus of NGC 4395.” J. W. Montano, H. Guo, A. J. Barth, V. U., R. Remigio, D. H. González-Buitrago, & J. V. Hernández Santisteban. 2022, *The Astrophysical Journal Letters*, 934:L37. [doi:[10.3847/2041-8213/ac7e54](https://doi.org/10.3847/2041-8213/ac7e54)]
183. “Black Hole Mass Measurements of Early-Type Galaxies NGC 1380 and NGC 6861 Through ALMA and HST Observations and Gas-Dynamical Modeling.” K. M. Kabasares, A. J. Barth, D. A. Buote, B. D. Boizelle, J. L. Walsh, A. J. Baker, J. Darling, L. C. Ho, & J. Cohn. 2022, *The Astrophysical Journal*, 934:162. [doi:[10.3847/1538-4357/ac7a38](https://doi.org/10.3847/1538-4357/ac7a38)]
182. “Gas inflows in the polar ring of NGC 4111: the birth of an AGN.” G. R. H. Roier *et al.* 2022, *Monthly Notices of the Royal Astronomical Society*, 512, 2556. [doi:[10.1093/mnras/stac634](https://doi.org/10.1093/mnras/stac634)]

181. “The Lick AGN Monitoring Project 2016: Dynamical Modeling of Velocity-resolved H β Lags in Luminous Seyfert Galaxies.” L. Villafañá, P. R. Williams, T. Treu, B. J. Brewer, A. J. Barth, V. U., *et al.* 2022, *The Astrophysical Journal*, 930:52. [doi:10.3847/1538-4357/ac6171]
180. “Relation between Black Hole Mass and Bulge Luminosity in Hard X-Ray Selected Type 1 AGNs.” S. Son, M. Kim, A. J. Barth, L. C. Ho. 2022, *Journal of the Korean Astronomical Society*, 55, 37. [doi:10.5303/JKAS.2022.55.2.37]
179. “The Paschen Jump as a Diagnostic of the Diffuse Nebular Continuum Emission in Active Galactic Nuclei.” H. Guo, A. J. Barth, K. T. Korista, M. R. Goad, E. M. Cackett, M. C. Bentz, *et al.* 2022, *The Astrophysical Journal*, 927:60. [doi:10.3847/1538-4357/ac4bc6]
178. “A New Iron Emission Template for Active Galactic Nuclei. I. Optical Template for the H β region.” D. Park, A. J. Barth, L. C. Ho, & A. Laor. 2022, *The Astrophysical Journal Supplement Series*, 258:38. [doi:10.3847/1538-4365/ac3f3e]
177. “The Lick AGN Monitoring Project 2016: Velocity-Resolved H β Lags in Luminous Seyfert Galaxies.” V. U., A. J. Barth, H. A. Vogler, H. Guo, T. Treu, *et al.* 2022, *The Astrophysical Journal*, 925:52. [doi:10.3847/1538-4357/ac3d26]
176. “Probing Early Super-massive Black Hole Growth and Quasar Evolution with Near-infrared Spectroscopy of 37 Reionization-era Quasars at $6.3 < z \leq 7.64$.” J. Yang, F. Wang, X. Fan, A. J. Barth, J. F. Hennawi, R. Nanni, *et al.* 2021, *The Astrophysical Journal*, 923:262. [doi:10.3847/1538-4357/ac2b32]
175. “AGN STORM 2: I. First results: A Change in the Weather of Mrk 817.” E. Kara *et al.* 2021, *The Astrophysical Journal*, 922:151. [doi:10.3847/1538-4357/ac2159]
174. “H α Reverberation Mapping of the Intermediate-Mass Active Galactic Nucleus in NGC 4395.” H. Cho, J.-H. Woo, T. Treu, P. R. Williams, S. F. Armen, A. J. Barth, *et al.* 2021, *The Astrophysical Journal*, 921:98. [doi:10.3847/1538-4357/ac1e92]
173. “A Hubble Space Telescope Imaging Survey of Low-Redshift Swift-BAT Active Galaxies.” M. Kim, A. J. Barth, L. C. Ho, & S. Son. 2021, *The Astrophysical Journal Supplement Series*, 256:40. [doi:10.3847/1538-4365/ac133e]
172. “An ALMA Gas-dynamical Mass Measurement of the Supermassive Black Hole in the Local Compact Galaxy UGC 2698.” J. H. Cohn, J. L. Walsh, B. D. Boizelle, A. J. Barth, K. Gebhardt, K. Gültekin, A. Yıldırım, D. A. Buote, J. Darling, A. J. Baker, L. C. Ho, & K. Kabasares. 2021, *The Astrophysical Journal*, 919:77. [doi:10.3847/1538-4357/ac0f78]
171. “On the multi-wavelength variability of Mrk 110: Two components acting at different timescales.” F. M. Vincentelli, I. McHardy, E. M. Cackett, A. J. Barth, K. Horne, M. Goad, K. Korista, J. Gelbord, W. Brandt, R. Edelson, J. A. Miller, M. Pahari, B. M. Peterson, T. Schmidt, R. D. Baldi, E. Breedt, J. V. Hernández Santisteban, E. Romero-Colmenero, M. Ward, & D. R. A. Williams. 2021, *Monthly Notices of the Royal Astronomical Society*, 504, 4337. [doi:10.1093/mnras/stab1033]
170. “Dynamical Modeling of the C IV Broad Line Region of the $z = 2.805$ Multiply Imaged Quasar SDSS J2222+2745.” P. R. Williams, T. Treu, H. Dahle, S. Valenti, L. Abramson, A. J. Barth, B. J. Brewer, K. Dyrland, M. Gladders, K. Horne, & K. Sharon. 2021, *The Astrophysical Journal*, 915:L9. [doi:10.3847/2041-8213/ac081b]
169. “The Black Hole Mass of the $z = 2.805$ Multiply Imaged Quasar SDSS J2222+2745 from Velocity-resolved Time Lags of the C IV Emission Line.” P. R. Williams, T. Treu, H. Dahle, S. Valenti, L. Abramson, A. J. Barth, K. Dyrland, M. Gladders, K. Horne, & K. Sharon. 2021, *The Astrophysical Journal*, 911:64. [doi:10.3847/1538-4357/abe943]
168. “The Discovery of a Highly Accreting, Radio-loud Quasar at $z = 6.82$.” E. Bañados, C. Mazzucchelli, E. Momjian, A.-C. Eilers, F. Wang, J.-T. Schindler, T. Connor, I. T. Andika, A. J. Barth, C. Carilli, F. B. Davies, R. Decarli, X. Fan, E. P. Farina, J. F. Hennawi, A. Pensabene, D. Stern, B. P. Venemans, L. Wenzl, & J. Yang. 2021, *The Astrophysical Journal*, 909:80. [doi:10.3847/1538-4357/abe239]
167. “Black Hole Mass Measurements of Radio Galaxies NGC 315 and NGC 4261 Using ALMA CO Observations.” B. D. Boizelle, J. L. Walsh, A. J. Barth, D. A. Buote, A. J. Baker, J. Darling, L. C. Ho, J. Cohn, & K. M. Kabasares. 2021, *The Astrophysical Journal*, 908:19. [doi:10.3847/1538-4357/abd24d]

166. “Space Telescope and Optical Reverberation Mapping Project. IX. Velocity-Delay Maps for Broad Emission Lines in NGC 5548.” K. Horne, G. De Rosa, B. M. Peterson, A. J. Barth, *et al.* 2021, *The Astrophysical Journal*, 907:76. [doi:[10.3847/1538-4357/abce60](https://doi.org/10.3847/1538-4357/abce60)]
165. “Exploring the hot gaseous halo around an extremely massive and relativistic jet launching spiral galaxy with XMM-Newton.” M. S. Mirakhor, S. A. Walker, J. Bagchi, A. C. Fabian, A. J. Barth, F. Combes, P. Dabhade, L. C. Ho, & M. B. Pandge. 2021, *Monthly Notices of the Royal Astronomical Society*, 500. [doi:[10.1093/mnras/staa3404](https://doi.org/10.1093/mnras/staa3404)]
164. “A Luminous Quasar at Redshift 7.642.” F. Wang, J. Yang, X. Fan, J. F. Hennawi, A. J. Barth, *et al.* 2021, *The Astrophysical Journal Letters*, 907:L1. [doi:[10.3847/2041-8213/abd8c6](https://doi.org/10.3847/2041-8213/abd8c6)]
163. “Intensive disc-reverberation mapping of Fairall 9: 1st year of *Swift* & LCO monitoring.” J. V. Hernández Santisteban, R. Edelson, K. Horne, J. M. Gelbord, A. J. Barth, *et al.* 2020, *Monthly Notices of the Royal Astronomical Society*, 498, 5399. [doi:[10.1093/mnras/staa2365](https://doi.org/10.1093/mnras/staa2365)]
162. “Crepuscular Rays from the Highly Inclined Active Galactic Nucleus in IC 5063.” W. P. Maksym, J. Schmidt, W. C. Keel, G. Fabbiano, T. C. Fischer, J. Bland-Hawthorn, A. J. Barth, M. Elvis, T. Oosterloo, L. C. Ho, M. Kim, H. Hwang, & E. Mayer. 2020, *The Astrophysical Journal Letters*, 902:L18. [doi:[10.3847/2041-8213/abb9b6](https://doi.org/10.3847/2041-8213/abb9b6)]
161. “Space Telescope and Optical Reverberation Mapping Project. XII. Broad-Line Region Modeling of NGC 5548.” P. R. Williams, A. Pancoast, T. Treu, B. J. Brewer, B. M. Peterson, A. J. Barth, *et al.* 2020, *The Astrophysical Journal*, 902:74. [doi:[10.3847/1538-4357/abbad7](https://doi.org/10.3847/1538-4357/abbad7)]
160. “Robotic reverberation mapping of the broad-line radio galaxy 3C 120.” M. Hlabathe, D. Starkey, K. Horne, E. Romero-Colmenero, S. Crawford, S. Valenti, H. Winkler, A. J. Barth, C. Onken, D. Sand, T. Treu, A. Diamond-Stanic, & C. Vilforth. 2020, *Monthly Notices of the Royal Astronomical Society*, 497, 2910. [doi:[10.1093/mnras/staa2171](https://doi.org/10.1093/mnras/staa2171)]
159. “Revealing the intermediate-mass black hole at the heart of the dwarf galaxy NGC 404 with sub-parsec resolution ALMA observations.” T. A. Davis, D. D. Nguyen, A. C. Seth, J. E. Greene, K. Nyland, A. J. Barth, M. Bureau, M. Cappellari, M. den Brok, S. Iguchi, F. Lelli, L. Liu, N. Neumayer, E. V. North, K. Onishi, M. Sarzi, M. D. Smith, & T. G. Williams. 2020, *Monthly Notices of the Royal Astronomical Society*, 496, 4061. [doi:[10.1093/mnras/staa1567](https://doi.org/10.1093/mnras/staa1567)]
158. “Pōniuā’ena: A Luminous $z = 7.5$ Quasar Hosting a 1.5 Billion Solar Mass Black Hole.” J. Yang, F. Wang, X. Fan, J. F. Hennawi, F. B. Davies, M. Yue, E. Banados, X.-B. Wu, B. Venemans, A. J. Barth, F. Bian, K. Boutsia, R. Decarli, E. P. Farina, R. Green, L. Jiang, J.-T. Li, C. Mazzucchelli, & F. Walter. 2020, *The Astrophysical Journal Letters*, 897:L14. [doi:[10.3847/2041-8213/ab9c26](https://doi.org/10.3847/2041-8213/ab9c26)]
157. “A Significantly Neutral Intergalactic Medium Around the Luminous $z=7$ Quasar J0252-0503.” F. Wang, F. B. Davies, J. Yang, J. F. Hennawi, X. Fan, A. J. Barth, L. Jiang, X.-B. Wu, D. M. Mudd, E. Bañados, F. Bian, R. Decarli, A.-C. Eilers, E. P. Farina, B. Venemans, F. Walter, & M. Yue. 2020, *The Astrophysical Journal*, 896:23. [doi:[10.3847/1538-4357/ab8c45](https://doi.org/10.3847/1538-4357/ab8c45)]
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