

Joseph R. Farah

CONTACT INFORMATION	Black Hole Initiative, Harvard University 20 Garden Street Cambridge, MA 02138 USA	ORCID: 0000-0003-4914-5625 E-mail: jfarah@lco.global Website: http://jrfarah.com Citations: Google Scholar profile
RESEARCH INTERESTS	I lead programs to measure the spins of compact objects across regimes, from infant millisecond magnetars in superluminous supernovae (SNe) to supermassive black holes resolved at the horizon scale. These measurements probe strong-field physics where no laboratory can reach and expose the engines driving the most energetic phenomena in the Universe. TAGS: <i>Astrophysical Phenomena:</i> core-collapse SNe, superluminous SNe, black hole spacetimes, chirping SNe, photon rings <i>Observational Techniques:</i> very-long-baseline interferometry (VLBI), radio astronomy, optical photometry, optical spectroscopy <i>Computational & Theoretical Methods:</i> general relativity, Bayesian modeling, machine/deep learning, geometric modeling, interferometric imaging, shock-cooling models, light curve modeling	
EDUCATION	University of California Santa Barbara, Santa Barbara, CA, USA <i>Ph.D. in Physics (completed)</i> <i>M.A. in Physics (completed)</i> University of Massachusetts Boston, Boston, MA, USA <i>B.S. in Physics, summa cum laude, with distinction</i>	2021–2026 2026 2023 2017–2021
PUBLICATION SUMMARY	8 First-author 160+ Total 26,000+ Citations 43 h-index 97 i10-index Selected Publications J. R. Farah, Prust, L. J., Howell, D. A., <i>et al.</i>. 2026. <i>Lense-Thirring precessing magnetar engine drives a superluminous supernova</i>. Nature, 651, 321-325. Reported the discovery of the first “chirping” supernova and its implications for the central engine hypothesis. Selected for the cover of the March 12, 2026 issue of <i>Nature</i>. J. R. Farah, Galison, P., Akiyama, K., <i>et al.</i>. 2022. <i>Selective Dynamical Imaging of Interferometric Data</i>. ApJL, 930, L18. Seventh paper of the EHT’s first Sagittarius A* results series, with full Collaboration co-authorship. Method recognized by the LeRoy Apker Award, EHT Early Career Award.	
SELECTED HONORS AND AWARDS	Miller Fellowship, Miller Institute for Basic Science, Berkeley AWARD AMOUNT: \$354,000 Bhaumik Prize Postdoctoral Fellowship, UCLA (declined) AWARD AMOUNT: \$276,000 UC Santa Barbara Mananya Tantiwivat Award	2026–2029 2026 2025

Broida-Hirschfelder Fellowship	2025
CITATION: <i>In recognition of his project uncovering the secrets of the strangest object in the universe, the black hole photon ring.</i>	
1 st Place Award, UC Santa Barbara Grad Slam	2025
Round 1 (<i>Physics and Chemistry</i>)	
UC Santa Barbara GSA Excellence in Teaching Award (nominated)	2025
UC Santa Barbara Academic Senate Outstanding Teaching Assistant Award (nominated)	2024
Event Horizon Telescope Early Career Award	2022
CITATION: <i>For his leadership and contribution to the dynamic imaging of the interferometric data used to image Sgr A*.</i>	
LeRoy Apker Award	2021
CITATION: <i>For the invention of the selective dynamical imaging method, with applications for studying rapidly-varying black holes.</i>	
UC Santa Barbara James and Mary Jo Hartle Graduate Fellowship	2021
National Science Foundation Graduate Research Fellowship	2021–2026
AWARD AMOUNT: \$138,000	
Arthur W. Martin III Scholarship	2021
Breakthrough Prize in Fundamental Physics (co-recipient)	2020
Northrop Grumman Scholarship	2020
Barry M. Goldwater Scholarship	2019
National Science Foundation Diamond Achievement Award [‡]	2019
Alton J. Brann Endowed Scholarship	2019
Smithsonian Fellowship	2018, 2019
Oracle Fellowship	2018, 2019
AJAS/AAAS Lifetime Fellowship	2018
Chancellor’s Scholarship, University of Massachusetts Boston	2017–2021
2 nd Place Award, Massachusetts State Science and Engineering Fair	2017
1 st Place Award, Massachusetts State Science and Engineering Fair	2016

SELECTED WORK
AND RESEARCH
EXPERIENCE

Miller Institute for Basic Research in Science	
<i>Miller Research Fellow, UC Berkeley — Berkeley, CA</i>	
<i>Hosts: Daniel Kasen, Raffaella Margutti</i>	
	2026–Present
Black Hole Initiative	
<i>Black Hole Explorer Fellow, Harvard University — Cambridge, MA</i>	
<i>Supervisor: Michael Johnson</i>	
	2026
Las Cumbres Observatory	
<i>NSF Graduate Research Fellowship — Goleta, CA</i>	
<i>Supervisor: Andy Howell</i>	
	2021–2026

Harvard-Smithsonian Center for Astrophysics	
<i>Member of the Black Hole Explorer Collaboration — Cambridge, MA</i>	2020–2026
<i>Supervisor: Michael Johnson, Alex Lupsasca</i>	
 <i>Smithsonian Fellowship with the Event Horizon Telescope — Cambridge, MA</i>	2018–2021
<i>Supervisor: Michael Johnson</i>	
 Quantum Computing Research Group	2019–2021
<i>Research Intern with Dr. Alioscia Hama — Boston, MA</i>	
 Harvard Laboratory for Particle Physics and Cosmology	2017–2018
<i>Research Intern with Dr. Melissa Franklin — Cambridge, MA</i>	
 QBism Research Group	2017–2019
<i>Oracle Fellow with Dr. Christopher Fuchs — Boston, MA</i>	
 Harvard School for Engineering and Applied Sciences	Summer 2016
<i>Summer Research Intern mentored by Dr. Chinwendu Enyioha — Cambridge, MA</i>	
 Tufts Department of Astrophysics	Summer 2015
<i>Summer Research Intern mentored by Dr. Anna Sajina — Medford, MA</i>	

TEACHING AND MENTORING

Invited workshop creator and lecturer, *Presentation presentation: a seminar on seminars*, Las Cumbres Observatory, Goleta, CA. January 2026.

Death Star Seminar, founder and lecturer. Informal graduate seminar series on supernova theory, Las Cumbres Observatory, Goleta, CA. Designed curriculum and delivered lectures. 2026.

Teaching Assistant, PHYS 23 (Electrostatics and waves), UC Santa Barbara. Fall 2024.

UC Santa Barbara GSA Excellence in Teaching Award (nominated)

UC Santa Barbara Academic Senate Outstanding Teaching Assistant Award (nominated)

Undergraduate research mentoring

Eyouel Abate (UC Berkeley)	2026–Present
Austin Mei (UC Berkeley)	2026–Present
Courtney Duong (UC Santa Barbara)	2024–Present
Project: Convolutional neural network for extraction of the $n = 1$ black hole photon ring	
Award: <i>Gene and Susan Lucas Undergraduate Research Scholarship</i>	
Award: <i>Edison STEM Research Scholarship</i>	
Franklin Myhre (UC Santa Barbara)	2024–Present
Project: Development of a <code>python</code> library for automated image-domain subring extraction	
Sanjit Masanam (UC Santa Barbara)	2024–2026
Award: <i>2025 Goldwater Scholarship (nominated)</i>	
Award: <i>2025 Ernest F. Hollings Scholarship</i>	
Songgun Lee (UC Santa Barbara)	2024–2026
<i>Co-founder at Masterminding</i>	
Tazzy Imbabi (UC Santa Barbara)	2024
Project: Exploration of selective dynamical imaging applications to BHEX	

SERVICE

Referee:

The Astrophysical Journal
Astronomy & Astrophysics

Internal referee, Event Horizon Telescope Collaboration.

Invited presenter, Las Cumbres Observatory Science Advisory Committee, Goleta, CA. Invited to present on the observatory's high-energy astrophysics science program. August 2025.

Local Organizing Committee, EHT Collaboration Meeting. 2020.

Local Organizing Committee, 2nd EHT Imaging Workshop, Black Hole Initiative, Harvard University, Cambridge, MA. July 2018.

INVITED TALKS AND COLLOQUIA

Precessing magnetar central engine drives a superluminous supernova. Galactic Center Group, UC Los Angeles, Los Angeles, CA. April 2026.

The first 4 years of SN 1993J revisited. UC Berkeley, Berkeley, CA. September 2025.

Lense-Thirring precessing magnetar engine drives a superluminous supernova. Multi-RAPTOR colloquium, UC Berkeley, Berkeley, CA. September 2025.

Inferring black hole spin from images of the photon ring. VandyGRAF Initiative, Vanderbilt University, Nashville, TN. September 2024.

What Lies Within: Imaging the Galactic Center. April APS Meeting, New York, NY. Invited session speaker. April 2022.

The First Image of a Black Hole. Skyscrapers, Inc., Seagrave Memorial Observatory, North Scituate, RI. 2021.

Very Long Baseline Interferometry and the Event Horizon Telescope. Astronomy 121, University of Massachusetts Boston, Boston, MA. 2019 (2), 2020 (2).

SEMINARS AND CONTRIBUTED TALKS

Spin inference of compact objects across regimes. Black Hole Initiative, Cambridge, MA. August 2026.

Precessing magnetar central engine drives a superluminous supernova. METAL group, University of Virginia, Charlottesville, VA. August 2026.

Spin inference of compact objects across regimes. Greene research group, Princeton University, Princeton, NJ. July 2026.

Precessing magnetar central engine drives a superluminous supernova. Narayan group, Center for Astrophysics | Harvard & Smithsonian, Cambridge, MA. July 2026.

Presentation presentation: a seminar on seminars. Workshop, Las Cumbres Observatory, Goleta, CA. January 2026.

General relativity meets a supernova for the first time. Las Cumbres Observatory colloquium, Goleta, CA. January 2026. [Event URL](#).

Lense-Thirring precessing magnetar engine drives a superluminous supernova. KIPAC, Stanford University, Stanford, CA. November 2025.

Machine- and deep-learning-driven angular momentum inference from Black Hole Explorer observations of the $n = 1$ photon subring. *Topics in Gravitational Physics*, APS Global Physics Summit. March 2025. [Event URL](#).

Current and future impacts of survey capabilities on the stripped-envelope problem. Kavli Institute

for Theoretical Physics, Santa Barbara, CA. February 2025.

Shock-cooling constraints via early-time observations of the Type IIb SN 2022hnt. Kavli Institute for Theoretical Physics, Santa Barbara, CA. February 2025.

Selective dynamical imaging of interferometric data and the second image of a black hole. *Astro Tea*, University of California, Santa Barbara, CA. June 2022.

Seeing the unseeable: the first image of a black hole. University of Massachusetts Boston, Boston, MA. May 2019.

Imaging a black hole with the Event Horizon Telescope. Harvard University, Cambridge, MA. April 2019.

OUTREACH AND PUBLIC ENGAGEMENT

General relativity beats the heart of a dying star. Public lecture, Santa Barbara Museum of Natural History. March 2026. [Event URL](#).

Extragalactic science with the Vera C. Rubin Observatory. Public lecture, Santa Barbara Museum of Natural History. August 2025. [Event URL](#).

The Black Hole Explorer and the edge of the universe. Public lecture, Santa Barbara Museum of Natural History. April 2025. [Event URL](#).

The Black Hole Explorer. *Astronomy on Tap*, Santa Barbara, CA. December 2024. [Event URL](#).

What does an astronomer do? Canalino Elementary School, Carpinteria, CA. October 2024.

The biggest telescopes! Aliso Elementary School, Carpinteria, CA. October 2023.

Imaging the black hole at our galaxy's center. Public lecture, Santa Barbara Museum of Natural History. May 2023. [Event URL](#).

LCO's top 9 tips for taking your best black hole photo. *Astronomy on Tap*, Santa Barbara, CA. November 2022. [Event URL](#).

AskScience AMA Series: Event Horizon Telescope results on the Galactic Center. *Reddit*. May 2022. [Article URL](#).

LCO's top 9 tips for taking your best black hole photo. Honors and AP physics classes, Medford High School, Medford, MA. 2022.

FILMOGRAPHY

Galison, P. L. (Director). 2021. *Black Holes: The Edge of All We Know*. Sandbox Films. [View on Netflix](#).

Galison, P. L. (Director). 2019. *Portrait of a Shadow*. Sandbox Films.

PUBLICATIONS (FIRST-AUTHOR)

Stats (all papers):

CITATIONS: 26,000+

REF'D PAPERS: 160+

h-INDEX: 43

i10-INDEX: 97

8. **J. R. Farah**, Lupsasca, A., Quataert, E., Johnson, M. D. 2026. *Interferometric inference of black hole spin from photon ring size and brightness*. ApJ, 1003, [63](#).

7. **J. R. Farah**, Prust, L. J., Howell, D. A., *et al.*. 2026. *Lense-Thirring precessing magnetar engine drives a superluminous supernova*. Nature, 651, [321-325](#). **NB:** selected for [cover](#) of the March 12, 2026 issue.

6. **J. R. Farah**, Howell, D. A., Hiramatsu, D., *et al.*. 2026. *When IIb Ceases To Be: Bridging the Gap Between IIb and Short-plateau Supernovae*. ApJ, 998, [321](#).

5. **J. R. Farah**, Prust, L. J., Terreran, G., *et al.*. 2025. *The First 4 Years of SN 1993J Revisited: Geometric m-ring Modeling of the Radio Shell with Closure Quantities Only*. Submitted to ApJ,

positive referee report received. arXiv e-prints, [arXiv:2509.20601](https://arxiv.org/abs/2509.20601).

4. **J. R. Farah**, Davelaar, J., Palumbo, D., Johnson, M., Delgado, J. 2025. *Machine and Deep Learning-driven Angular Momentum Inference from BHEX Observations of the $n = 1$ Photon Ring*. ApJ, 983, [185](#).
3. **J. R. Farah**, Howell, D. A., Terreran, G., *et al.* 2025. *Shock-cooling Constraints via Early-time Observations of the Type IIb SN 2022hnt*. ApJ, 984, [60](#).
2. ^S**J. R. Farah**, Galison, P., Akiyama, K., *et al.* 2022. *Selective Dynamical Imaging of Interferometric Data*. ApJL, 930, [L18](#). [arXiv:2409.08321](https://arxiv.org/abs/2409.08321).
1. **J. R. Farah**, Pesce, D. W., Johnson, M. D., Blackburn, L. 2020. *On the Approximation of the Black Hole Shadow with a Simple Polar Curve*. ApJ, 900, [77](#).

PUBLICATIONS
(MAJOR OR
NORMAL
CONTRIBUTION)

(last updated: Sep 2025)

110. Wang, Z. Y., Pastorello, A., Cai, Y. Z., ..., **J. R. Farah**, *et al.* 2025. *Massive stars exploding in a He-rich circumstellar medium: XI. Diverse evolution of five Ibn SNe 2020nxt, 2020taz, 2021bbv, 2023utc, and 2024aej*. A&A, 700, A156. [arXiv:2506.15139](https://arxiv.org/abs/2506.15139).
109. Bostroem, K. A., Valenti, S., Sand, D. J., ..., **J. R. Farah**, *et al.* 2025. *Late-time Hubble Space Telescope Ultraviolet Spectra of SN 2023ixf and SN 2024ggi Show Ongoing Interaction with Circumstellar Material*. arXiv e-prints, [arXiv:2508.11756](https://arxiv.org/abs/2508.11756).
108. Kwok, L. A., Singh, M., Jha, S. W., ..., **J. R. Farah**, *et al.* 2025. *JWST and Ground-based Observations of the Type Iax Supernovae SN 2024pxl and SN 2024vjm: Evidence for Weak Deflagration Explosions*. ApJL, 989, L33. [arXiv:2505.02944](https://arxiv.org/abs/2505.02944).
107. Gagliano, A., Villar, V., Matsumoto, T., ..., **J. R. Farah**, *et al.* 2025. *Evidence for an Instability-induced Binary Merger in the Double-peaked, Helium-rich Type IIn Supernova 2023zkd*. ApJ, 989, 182. [arXiv:2502.19469](https://arxiv.org/abs/2502.19469).
106. Śniegowska, M., Trakhtenbrot, B., Makrygianni, L., ..., **J. R. Farah**, *et al.* 2025. *AT 2019aalc: A Bowen Fluorescence Flare with a Precursor Flare in an Active Galactic Nucleus*. ApJ, 989, 173. [arXiv:2505.00083](https://arxiv.org/abs/2505.00083).
105. Makrygianni, L., Arcavi, I., Newsome, M., ..., **J. R. Farah**, *et al.* 2025. *The Double Tidal Disruption Event AT 2022dbl Implies that at Least Some “Standard” Optical Tidal Disruption Events Are Partial Disruptions*. ApJL, 987, L20. [arXiv:2505.16867](https://arxiv.org/abs/2505.16867).
104. Dahale, R., Cho, I., Moriyama, K., ..., **J. R. Farah**, *et al.* 2025. *Origin of the ring ellipticity in the black hole images of M87**. A&A, 699, A279. [arXiv:2505.10333](https://arxiv.org/abs/2505.10333).
103. Park, S. H., Rho, J., Yoon, S. C., ..., **J. R. Farah**, *et al.* 2025. *Near-Infrared Spectroscopy and Detection of Carbon Monoxide in the Type II Supernova SN 2023ixf*. arXiv e-prints, [arXiv:2507.11877](https://arxiv.org/abs/2507.11877).
102. Goddi, C., Carlos, D. F., Crew, G. B., ..., **J. R. Farah**, *et al.* 2025. *First polarization study of the M87 jet and active galactic nuclei at submillimeter wavelengths with ALMA*. A&A, 699, A265.

^SThis was the seventh paper of the 10-paper first Galactic Center results series from the Event Horizon Telescope, presenting the second image of a black hole and the first horizon-scale images of Sgr A*.

[arXiv:2505.10181](#).

101. Jiang, S. Q., Xu, D., van Hoof, A. P., ..., **J. R. Farah**, *et al.*. 2025. *EP240801a/XRF 240801B: An X-Ray Flash Detected by the Einstein Probe and the Implications of Its Multiband Afterglow*. *ApJL*, 988, L34. [arXiv:2503.04306](#).
100. Sun, H., Li, W. X., Liu, L. D., ..., **J. R. Farah**, *et al.*. 2025. *A fast X-ray transient from a weak relativistic jet associated with a type Ic-BL supernova*. *Nature Astronomy*, 9, 1073-1085. [arXiv:2410.02315](#).
99. Kumar, H., Berger, E., Blanchard, P. K., ..., **J. R. Farah**, *et al.*. 2025. *A Near-infrared Search for Helium in the Superluminous Supernova SN 2024ahr*. *ApJ*, 987, 127. [arXiv:2501.01485](#).
98. Singh, M., Kwok, L. A., Jha, S. W., ..., **J. R. Farah**, *et al.*. 2025. *Photometry and Spectroscopy of SN 2024pxl: A Luminosity Link Among Type Ia_x Supernovae*. *arXiv e-prints*, [arXiv:2505.02943](#).
97. Jacobson-Galán, W., Dessart, L., Davis, K., *et al.*. 2025. *Final Moments III: Explosion Properties and Progenitor Constraints of CSM-Interacting Type II Supernovae*. *arXiv e-prints*, [arXiv:2505.04698](#).
96. Liu, M., Zhang, Y., Wang, Y., ..., **J. R. Farah**, *et al.*. 2025. *Detection of an Orphan X-Ray Flare from a Blazar Candidate EP240709a with the Einstein Probe*. *ApJ*, 984, 5. [arXiv:2412.18463](#).
95. Shrestha, M., DeSoto, S., Sand, D. J., ..., **J. R. Farah**, *et al.*. 2025. *Spectropolarimetry of SN 2023ixf Reveals Both Circumstellar Material and an Aspherical Helium Core*. *ApJL*, 982, L32. [arXiv:2410.08199](#).
94. Ravi, A. P., Valenti, S., Dong, Y., ..., **J. R. Farah**, *et al.*. 2025. *Luminous Type II Short-plateau SN 2023ufx: Asymmetric Explosion of a Partially Stripped Massive Progenitor*. *ApJ*, 982, 12. [arXiv:2411.02493](#).
93. Röder, J., Wielgus, M., Lobanov, A. P., ..., **J. R. Farah**, *et al.*. 2025. *A multifrequency study of sub-parsec jets with the Event Horizon Telescope*. *A&A*, 695, A233. [arXiv:2501.05518](#).
92. Event Horizon Telescope Collaboration, ..., **J. R. Farah**, *et al.*. 2025. *The persistent shadow of the supermassive black hole of M87: II. Model comparisons and theoretical interpretations*. *A&A*, 693, A265.
91. Yesmin, N., Pellegrino, C., Modjaz, M., ..., **J. R. Farah**, *et al.*. 2025. *Spectral dataset of young type Ib supernovae and their time evolution*. *A&A*, 693, A307. [arXiv:2409.04522](#).
90. Onori, F., Nicholl, M., Ramsden, P., ..., **J. R. Farah**, *et al.*. 2025. *The case of AT2022wtn: a tidal disruption event in an interacting galaxy*. *MNRAS*, 540, 498-520. [arXiv:2504.21686](#).
89. Ma, X., Wang, X., Mo, J., ..., **J. R. Farah**, *et al.*. 2025. *Supernovae at distances $\lesssim 40$ Mpc: II. Supernova rate in the local Universe*. *A&A*, 698, A306. [arXiv:2504.04507](#).
88. Ma, X., Wang, X., Mo, J., ..., **J. R. Farah**, *et al.*. 2025. *Supernovae at distances $\lesssim 40$ Mpc: I. Catalogues and fractions of supernovae in a complete sample*. *A&A*, 698, A305. [arXiv:2504.04393](#).
87. Zeng, X., Luo, Y., Wang, X., ..., **J. R. Farah**, *et al.*. 2025. *SN 2023xqm: A gradually fading Ia supernova exhibiting isolated high-velocity signatures*. *A&A*, 698, A70.
86. Zeng, X., Hu, L., Zheng, S., ..., **J. R. Farah**, *et al.*. 2025. *SN 2023ehl: A Normal Type Ia*

Supernova with High-velocity Features. ApJ, 986, 68.

85. Hsu, B., Smith, N., Goldberg, J. A., ..., **J. R. Farah**, *et al.*. 2025. *One Year of SN 2023ixf: Breaking through the Degenerate Parameter Space in Light-curve Models with Pulsating Progenitors*. ApJ, 990, 148. [arXiv:2408.07874](#).

84. Palit, B., Śniegowska, M., Markowitz, A., ..., **J. R. Farah**, *et al.*. 2025. *Markarian 590: the AGN awakens*. MNRAS, 540, L14-L20. [arXiv:2501.07225](#).

83. Subrayan, B. M., Sand, D. J., Bostroem, K. A., ..., **J. R. Farah**, *et al.*. 2025. *Early Shock Cooling Observations and Progenitor Constraints of Type IIb Supernova SN 2024uwq*. ApJL, 990, L68. [arXiv:2505.02908](#).

82. Shu, X., Yang, L., Yang, H., ..., **J. R. Farah**, *et al.*. 2025. *EP241021a: A Months-duration X-Ray Transient with Luminous Optical and Radio Emission*. ApJL, 990, L29. [arXiv:2505.07665](#).

81. Andrews, J. E., Shrestha, M., Bostroem, K. A., ..., **J. R. Farah**, *et al.*. 2025. *Asymmetries and Circumstellar Interaction in the Type II SN 2024bch*. ApJ, 980, 37. [arXiv:2411.02497](#).

80. Li, W. X., Zhu, Z. P., Zou, X. Z., ..., **J. R. Farah**, *et al.*. 2025. *An extremely soft and weak fast X-ray transient associated with a luminous supernova*. arXiv e-prints, [arXiv:2504.17034](#).

79. Pastorello, A., Reguitti, A., Tartaglia, L., ..., **J. R. Farah**, *et al.*. 2025. *A long-lasting eruption heralds SN 2023ldh, a clone of SN 2009ip*. A&A, 701, A32. [arXiv:2503.23123](#).

78. Baer-Way, R., Chandra, P., Modjaz, M., ..., **J. R. Farah**, *et al.*. 2025. *A Multiwavelength Autopsy of the Interacting Type IIin Supernova 2020ywx: Tracing Its Progenitor Mass-loss History for 100 Yr Before Death*. ApJ, 983, 101. [arXiv:2412.06914](#).

77. Kumar, H., Berger, E., Blanchard, P. K., ..., **J. R. Farah**, *et al.*. 2025. *A Detection of Helium in the Bright Superluminous Supernova SN 2024rmj*. arXiv e-prints, [arXiv:2506.06417](#).

76. Baczko, A. K., Kadler, M., Ros, E., ..., **J. R. Farah**, *et al.*. 2024. *The putative center in NGC 1052*. A&A, 692, A205. [arXiv:2501.08685](#).

75. Pellegrino, C., Modjaz, M., Takei, Y., ..., **J. R. Farah**, *et al.*. 2024. *The X-Ray Luminous Type Ibn SN 2022ablq: Estimates of Preexplosion Mass Loss and Constraints on Precursor Emission*. ApJ, 977, 2. [arXiv:2407.18291](#).

74. Dong, Y., Tsuna, D., Valenti, S., ..., **J. R. Farah**, *et al.*. 2024. *SN2023fyq: A Type Ibn Supernova with Long-standing Precursor Activity Due to Binary Interaction*. ApJ, 977, 254. [arXiv:2405.04583](#).

73. Newsome, M., Arcavi, I., Howell, D. A., ..., **J. R. Farah**, *et al.*. 2024. *Mapping the Inner 0.1 pc of a Supermassive Black Hole Environment with the Tidal Disruption Event and Extreme Coronal-line Emitter AT 2022upj*. ApJ, 977, 258. [arXiv:2406.11972](#).

72. Algaba, J., Baloković, M., Chandra, S., ..., **J. R. Farah**, *et al.*. 2024. *Broadband multi-wavelength properties of M87 during the 2018 EHT campaign including a very high energy flaring episode*. A&A, 692, A140. [arXiv:2404.17623](#).

71. Szalai, T., Könyves-Tóth, R., Nagy, A., ..., **J. R. Farah**, *et al.*. 2024. *The story of SN 2021aatd: A peculiar 1987A-like supernova with an early-phase luminosity excess*. A&A, 690, A17. [arXiv:2406.02498](#).

70. Dong, Y., Valenti, S., Ashall, C., ..., **J. R. Farah**, *et al.*. 2024. *Characterizing the Rapid Hydrogen Disappearance in SN 2022crv: Evidence of a Continuum between Type Ib and IIb Supernova Properties*. *ApJ*, 974, 316. [arXiv:2309.09433](#).
69. Kumar, H., Berger, E., Hiramatsu, D., ..., **J. R. Farah**, *et al.*. 2024. *AT2023vto: An Exceptionally Luminous Helium Tidal Disruption Event from a Massive Star*. *ApJL*, 974, L36. [arXiv:2408.01482](#).
68. Johnson, M. D., Akiyama, K., Baturin, R., ..., **J. R. Farah**, *et al.*. 2024. *The Black Hole Explorer: motivation and vision*. 13092, 130922D. [arXiv:2406.12917](#).
67. Jacobson-Galán, W., Dessart, L., Davis, K., *et al.*. 2024. *Final Moments. II. Observational Properties and Physical Modeling of Circumstellar-material-interacting Type II Supernovae*. *ApJ*, 970, 189. [arXiv:2403.02382](#).
66. Park, S., Rho, J., Yoon, S. C., ..., **J. R. Farah**, *et al.*. 2024. *Optical and Infrared Observation of a Type IIP Supernova 2021qqu*. 536, 165.
65. Faris, S., Arcavi, I., Makrygianni, L., ..., **J. R. Farah**, *et al.*. 2024. *Light-curve Structure and H α Line Formation in the Tidal Disruption Event AT 2019azh*. *ApJ*, 969, 104. [arXiv:2312.03842](#).
64. Kwok, L. A., Siebert, M. R., Johansson, J., ..., **J. R. Farah**, *et al.*. 2024. *Ground-based and JWST Observations of SN 2022pul. II. Evidence from Nebular Spectroscopy for a Violent Merger in a Peculiar Type Ia Supernova*. *ApJ*, 966, 135. [arXiv:2308.12450](#).
63. Event Horizon Telescope Collaboration, ..., **J. R. Farah**, *et al.*. 2024. *The persistent shadow of the supermassive black hole of M 87. I. Observations, calibration, imaging, and analysis*. *A&A*, 681, A79.
62. Pearson, J., Sand, D. J., Lundqvist, P., ..., **J. R. Farah**, *et al.*. 2024. *Strong Carbon Features and a Red Early Color in the Underluminous Type Ia SN 2022xkq*. *ApJ*, 960, 29. [arXiv:2309.10054](#).
61. Siebert, M. R., Kwok, L. A., Johansson, J., ..., **J. R. Farah**, *et al.*. 2024. *Ground-based and JWST Observations of SN 2022pul. I. Unusual Signatures of Carbon, Oxygen, and Circumstellar Interaction in a Peculiar Type Ia Supernova*. *ApJ*, 960, 88. [arXiv:2308.12449](#).
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[†]These six papers are the first results papers from the Event Horizon Telescope, presenting the first image of a black hole.

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(last updated: Aug 2025)

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CLASSIFICATIONS,
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CIRCULARS

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First or co-author on 90+ Transient Name Server classification reports, AstroNotes, and GCN circulars, 2022–present, as part of the Global Supernova Project.

SOFTWARE
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