

## Andrew Chael | CV

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RESEARCH INTERESTS	black holes, accretion, relativistic jets, magnetohydrodynamic simulations, computational imaging.	
EDUCATION	<b>Harvard University</b> , Cambridge, MA <i>Ph.D. in Physics, May 2019</i> <i>A.M. in Physics, March 2015</i>	2013 – 2019
	<b>Carleton College</b> , Northfield, MN <i>B.A. in Physics summa cum laude, June 2013</i> <i>Secondary Concentration in Medieval and Renaissance Studies</i>	2009 – 2013
RESEARCH EXPERIENCE	<b>Associate Research Scholar</b> <i>Princeton Gravity Initiative, Princeton University</i>	2022 –
	<b>NASA Hubble Fellowship Program Einstein Fellow</b> <i>Princeton Center for Theoretical Science, Princeton University</i>	2019 – 2022
	<b>Black Hole Initiative Visiting Postdoctoral Fellow</b> <i>Center for Astrophysics   Harvard &amp; Smithsonian</i>	2019
	<b>Graduate Student Researcher: Accretion Theory</b> <i>Center for Astrophysics   Harvard &amp; Smithsonian</i> <ul style="list-style-type: none"><li>• Adviser: Ramesh Narayan</li></ul>	2015 – 2019
	<b>Graduate Student Researcher: VLBI Imaging</b> <i>Center for Astrophysics   Harvard &amp; Smithsonian</i> <ul style="list-style-type: none"><li>• Advisers: Sheperd Doeleman and Michael Johnson</li></ul>	2014 – 2019
	<b>Undergraduate Student Researcher</b> <i>CSIRO Astronomy and Space Science</i> <ul style="list-style-type: none"><li>• Adviser: Ryan Shannon</li></ul>	2011 – 2012
	<b>Undergraduate Student Researcher</b> <i>Carleton College</i> <ul style="list-style-type: none"><li>• Adviser: Joel Weisberg</li></ul>	2010 – 2013

TEACHING AND MENTORSHIP EXPERIENCE	<b>Undergraduate Summer Research Program Mentor</b>	2023 – 2024
	<i>Princeton Department of Astrophysical Sciences</i>	
	<b>Resident Tutor</b>	2015 – 2019
	<i>Dunster House, Harvard College</i>	
	<b>Fellowship Committee Chair</b>	2017 – 2019
	<i>Dunster House, Harvard College</i>	
	<b>Teaching Consultant</b>	2016 – 2018
STUDENTS MENTORED	<i>Department of Physics, Harvard University</i>	
	<b>Teaching Fellow</b>	2015 – 2016
	<i>Department of Physics, Harvard University</i>	
	• PHYS 125: Widely Applied Physics, Fall 2015. (Prof. John Doyle)	
	• PHYS 175: Modern Optical Physics, Spring 2016. (Prof. Markus Greiner)	
	<b>Physics Tutor</b>	2010 – 2013
	<i>Carleton College Department of Physics</i>	
ACADEMIC SERVICE	<b>Writing Consultant</b>	2010 – 2013
	<i>Carleton College Writing Center</i>	
	Zack Gelles (PhD Student, Princeton)	2023 –
	Tejahni Desire (Undergraduate, Princeton)	2023 – 2025
	Kate Sheldon (Undergraduate, Princeton)	2024
	Antonio Fuentes (PhD Student, IAA)	2020 – 2022
	Elected Member, EHT Collaboration Science Board	2024 – 2026
	Jets Science Lead, Black Hole Explorer (BHEX) Mission	2024 –
	Coordinator, EHTC Polarimetry Working Group	2021 – 2024
	Organizer, Princeton Gravity Initiative Colloquium Series	2023 – 2024
	Panel Member, Hubble Space Telescope Cycle 31 TAC	2023
	Member, EHTC Climate Task Force	2020 – 2024
	Reviewer, <i>The Astrophysical Journal Letters</i>	2020 –
	Reviewer, <i>The Astrophysical Journal</i>	2020 –
	Reviewer, <i>Astronomy and Astrophysics</i>	2020 –
	Reviewer, <i>Monthly Notices of the Royal Astronomical Society</i>	2019 –

CONFERENCE ORGANIZATION	Organizer, IAS Workshop on Accretion Models Princeton, NJ	Nov. 2023
	Organizer, “Modeling Plasmas Around Black Holes” Lorentz Center, Leiden, Netherlands	Sep. 2023
	SOC Member, EHT Summer Collaboration Meeting Taichung, Taiwan	Jun. 2023
	Organizer, “Improving Accretion Models with Plasma Theory” Princeton, NJ	Feb. 2023
	SOC Member, EHT Winter Collaboration Meeting Virtual	Dec. 2021
	Primary Organizer, “Polarized Radiation from SMBHs” Princeton, NJ	May 2021
	SOC Member, 3 <sup>rd</sup> EHT Imaging Workshop Virtual	May 2020
	SOC Member, EHT Polarization Workshop Bonn, Germany	Jul. 2019
	SOC Member, 2 <sup>nd</sup> EHT Imaging Workshop Cambridge, MA	Jul. 2018
GRANTS & ALLOCATIONS	SOC Member, 1 <sup>st</sup> EHT Imaging Workshop Cambridge, MA	Nov. 2017
	NSF Collaborative AAG grant, co-PI. \$326,000 ( <i>proposal submitted</i> )	2024
	TACC Stampede3, 450000 node hours (PHY240214)	2024
	TACC Stampede2, 915000 node hours (AST190053, Renewal)	2022
	TACC Stampede2, 418268 node hours (AST190053)	2020

HONORS	ICBS Frontiers of Science Award (to 5 coordinators of EHTC Paper IV, 2019 and EHT Collaboration)	2025
	PCTS John Archibald Wheeler Fellow	2021
	Royal Astronomical Society Group Award (to EHT collaboration)	2021
	Event Horizon Telescope Early Career Award	2020
	Event Horizon Telescope Outstanding Thesis Award	2020
	Einstein Medal (to EHT collaboration)	2020
	Breakthrough Prize in Theoretical Physics (to EHT collaboration)	2019
	AAS Bruno Rossi Prize (to EHT collaboration)	2020
	NSF Diamond Achievement Award (to EHT collaboration)	2020
	Eric Keto Prize in Theoretical Astrophysics, Harvard Astronomy	2019
	Queerty.com Pride 50	2019
	Harvard University Certificate of Distinction in Teaching	2016
	NSF Graduate Research Fellowship Honorable Mention	2014
	Phi Beta Kappa, Carleton College	2013
	Distinction in Physics and Integrative Exercise, Carleton College	2013
	Lawrence McKinley Gould Prize in Natural Science, Carleton College	2013
	Catherine Boyd Prize in Medieval Studies, Carleton College	2013
	Rhodes Scholarship Finalist	2013
	Dean's List, Carleton College	2010, 2011, 2012
	United States Department of Education Presidential Scholar	2009

FIRST AUTHOR AND PRIMARY COLLABORATION PUBLICATIONS	1. <b>A Chael.</b> “Survey of radiative, two-temperature magnetically arrested simulations of the black hole M87* I: turbulent electron heating.” <i>MNRAS</i> , 537, p. 2496-2515, 2025. doi: <a href="https://doi.org/10.1093/mnras/staf200">10.1093/mnras/staf200</a>
	2. <b>A Chael.</b> “Hybrid GRMHD and force-free simulations of black hole accretion.” <i>MNRAS</i> 532, p. 3198-3221, 2024. doi: <a href="https://doi.org/10.1093/mnras/stae1692">10.1093/mnras/stae1692</a>

3. The Event Horizon Telescope Collaboration et al.  
**(paper writing team)**  
 “First Sagittarius A\* Event Horizon Telescope Results. VIII. physical interpretation of the polarized ring.”  
*ApJL* 964, L26, 2024. doi:[10.3847/2041-8213/ad2df1](https://doi.org/10.3847/2041-8213/ad2df1)
4. The Event Horizon Telescope Collaboration et al.  
**(paper writing team)**  
 “First Sagittarius A\* Event Horizon Telescope Results. VII. polarization of the ring.”  
*ApJL* 964, L25, 2024. doi:[10.3847/2041-8213/ad2df0](https://doi.org/10.3847/2041-8213/ad2df0)
5. **A Chael**, A Lupsasca, GN Wong, E Quataert.  
 “Black hole polarimetry I: a signature of electromagnetic energy extraction.”  
*ApJ* 958, 65, 2023. doi:[10.3847/1538-4357/acf92d](https://doi.org/10.3847/1538-4357/acf92d)
6. The Event Horizon Telescope Collaboration et al.  
**(sole paper coordinator)**  
 “First Event Horizon Telescope Results IX: detection of near-horizon circular polarization.”  
*ApJL* 957, L20, 2023. doi:[10.3847/2041-8213/acff70](https://doi.org/10.3847/2041-8213/acff70)
7. **A Chael**, D Pesce, S Issaoun et al.  
 “Multifrequency black hole imaging for the next-generation Event Horizon Telescope.”  
*ApJ* 945, 40, 2023. doi:[10.3847/1538-4357/acb7e4](https://doi.org/10.3847/1538-4357/acb7e4)
8. The Event Horizon Telescope Collaboration et al.  
**(paper writing team)**  
 “First Sagittarius A\* Event Horizon Telescope Results III: imaging of the Galactic Center supermassive black hole.”  
*ApJL* 930, L14, 2022. doi:[10.3847/2041-8213/ac6429](https://doi.org/10.3847/2041-8213/ac6429)
9. **A Chael**, MD Johnson, A Lupsasca.  
 “Observing the inner shadow of a black hole: a direct view of the event horizon.”  
*ApJ* 918, 6, 2021. doi:[10.3847/1538-4357/ac09ee](https://doi.org/10.3847/1538-4357/ac09ee)
10. The Event Horizon Telescope Collaboration et al.  
**(one of three paper coordinators)**  
 “First M87 Event Horizon Telescope Results VIII: magnetic field structure near the event horizon.”  
*ApJL* 910, L13, 2021. doi:[10.3847/2041-8213/abe4de](https://doi.org/10.3847/2041-8213/abe4de)
11. The Event Horizon Telescope Collaboration et al.  
**(paper writing team)**  
 “First M87 Event Horizon Telescope Results VII: polarization of the ring.”  
*ApJL* 910, L12, 2021. doi:[10.3847/2041-8213/abe71d](https://doi.org/10.3847/2041-8213/abe71d)

12. **A Chael**, R Narayan, MD Johnson.  
 “Two-temperature, Magnetically Arrested Disc simulations of the supermassive black hole in M87.”  
*MNRAS* 486, p.2873-2895, 2019. doi:[10.1093/mnras/stz988](https://doi.org/10.1093/mnras/stz988)
13. The Event Horizon Telescope Collaboration et al.  
**(one of five paper coordinators)**  
 “First M87 Event Horizon Telescope Results IV: imaging the central supermassive black hole.”  
*ApJL* 875, L4, 2019. doi:[10.3847/2041-8213/ab0e85](https://doi.org/10.3847/2041-8213/ab0e85)
14. **A Chael**, M Rowan, R Narayan, MD Johnson, L Sironi.  
 “The role of electron heating physics in images and variability of the Galactic Center black hole Sagittarius A\*.”  
*MNRAS* 478, p.5209-5229, 2018. doi:[10.1093/mnras/sty1261](https://doi.org/10.1093/mnras/sty1261)
15. **A Chael**, MD Johnson, KL Bouman et al.  
 “Interferometric imaging directly with closure phases and closure amplitudes.”  
*ApJ* 857, 23, 2018. doi:[10.3847/1538-4357/aab6a8](https://doi.org/10.3847/1538-4357/aab6a8)
16. **A Chael**, R Narayan, A Sadowski.  
 “Evolving non-thermal electrons in simulations of black hole accretion.”  
*MNRAS* 470, p.2367–2386, 2017. doi:[10.1093/mnras/stx1345](https://doi.org/10.1093/mnras/stx1345)
17. **A Chael**, MD Johnson, R Narayan et al.  
 “High-resolution linear polarimetric imaging for the Event Horizon Telescope.”  
*ApJ* 829, 11, 2016. doi:[10.3847/0004-637X/829/1/11](https://doi.org/10.3847/0004-637X/829/1/11)

STUDENT  
PUBLICATIONS

- Z Gelles, **A Chael**, E Quataert.  
 “Signatures of black hole spin and plasma acceleration in jet polarimetry.”  
*ApJ* 981, 204, 2025. doi:[10.3847/1538-4357/adb1aa](https://doi.org/10.3847/1538-4357/adb1aa)
- T Desire, A Cárdenas-Avendaño, **A Chael**  
 “Multifrequency models of black hole photon rings from low-luminosity accretion disks.”  
*ApJ* 980, 262, 2025. doi:[10.3847/1538-4357/adac4d](https://doi.org/10.3847/1538-4357/adac4d)
- A Fuentes et al.  
 “Filamentary structures as the origin of blazar jet radio variability.”  
*Nat. Astron.* 7, 2024. doi:[10.1038/s41550-023-02105-7](https://doi.org/10.1038/s41550-023-02105-7)

OTHER  
PUBLICATIONS  
(SELECTED)

- Y Tsunetoe, D Pesce, R Narayan, **A Chael** et al.  
 “Limb-brightened jet in M87 from anisotropic nonthermal electrons.”  
*ApJ* 984, 35, 2025. doi:[10.3847/1538-4357/adc37a](https://doi.org/10.3847/1538-4357/adc37a)
- I Cho et al.  
 “Enhanced Imaging of M87\*: Simulations with the EHT and extended-KVN.”  
*JKAS* 58, p. 17-29, 2025. doi:[10.5303/JKAS.2025.58.1.17](https://doi.org/10.5303/JKAS.2025.58.1.17)

- The Event Horizon Telescope Collaboration et al.  
“The persistent shadow of the supermassive black hole of M 87. II. Model comparisons and theoretical interpretations.”  
*A&A* 693, A265, 2025. doi:[10.1051/0004-6361/202451296](https://doi.org/10.1051/0004-6361/202451296)
- A Saiz-Pérez et al.  
“Probing jet dynamics and collimation in radio galaxies: Application to NGC 1052.”  
*A&A* 693, A169, 2025. doi: [10.1051/0004-6361/202451698](https://doi.org/10.1051/0004-6361/202451698)
- A Raymond et al.  
“First Very Long Baseline Interferometry detections at 870  $\mu\text{m}$ .”  
*AJ*. 168, 3, 2024. doi:[10.3847/1538-3881/ad5bdb](https://doi.org/10.3847/1538-3881/ad5bdb)
- MD Johnson et al.  
“The Black Hole Explorer: motivation and vision.”  
*Proc. SPIE Astron.* 2024. doi:[10.1117/12.3019835](https://doi.org/10.1117/12.3019835)
- A Levis, **A Chael**, KL Bouman, M Wielgus, P Srinivasan.  
“Orbital polarimetric tomography of a flare near the Sagittarius A\* supermassive black hole.”  
*Nat. Astron.* 8, 2024. doi:[10.1038/s41550-024-02238-3](https://doi.org/10.1038/s41550-024-02238-3)
- The Event Horizon Telescope Collaboration et al.  
“The persistent shadow of the supermassive black hole of M 87. I. Observations, calibration, imaging, and analysis.”  
*A&A* 681, A79, 2024. doi:[10.1051/0004-6361/202347932](https://doi.org/10.1051/0004-6361/202347932)
- F Roelofs, MD Johnson, **A Chael** et al.  
“Polarized geometric modeling for mm-VLBI observations of black holes.”  
*ApJL*. 957, L21, 2023. doi:[10.3847/2041-8213/acff6f](https://doi.org/10.3847/2041-8213/acff6f)
- DCM Palumbo, GN Wong, **A Chael**, MD Johnson.  
“Demonstrating photon ring existence with single-baseline polarimetry.”  
*ApJL* 952, L31, 2023. doi:[10.3847/2041-8213/ace630](https://doi.org/10.3847/2041-8213/ace630)
- R Qiu, A Ricarte, R narayan, GN Wong, **A Chael**, DCM Palumbo.  
“Using machine learning to link black hole accretion flows with spatially resolved polarimetric observables.”  
*MNRAS* 520, p.4867-4888, 2023. doi:[10.1093/mnras/stad466](https://doi.org/10.1093/mnras/stad466)
- MD Johnson et al.  
“Key science goals for the next-generation Event Horizon Telescope.”  
*Galaxies* 11, 3, 2023. doi:[10.3390/galaxies11030061](https://doi.org/10.3390/galaxies11030061)
- K Chatterjee, **A Chael** et al.  
“Accretion Flow Morphology in Numerical Simulations of Black Holes from the ngEHT Model Library: The Impact of Radiation Physics.”  
*Galaxies* 11, 2, 2023. doi:[10.3390/galaxies11020038](https://doi.org/10.3390/galaxies11020038)
- S Issaoun et al.  
“Enabling transformational ngEHT science via the inclusion of 86 GHz capabilities.”  
*Galaxies* 11, 1, 2023. doi:[10.3390/galaxies11010028](https://doi.org/10.3390/galaxies11010028)

- P Tiede, AE Broderick, DCM Palumbo, **A Chael**.  
“Measuring the ellipticity of M87\* images.”  
*ApJ* 940, 2, 2022. doi:[10.3847/1538-4357/ac9cd2](https://doi.org/10.3847/1538-4357/ac9cd2)
- H Okino et al.  
“Collimation of the relativistic jet in the quasar 3C 273.”  
*ApJ* 940, 1, 2022. doi:[10.3847/1538-4357/ac97e5](https://doi.org/10.3847/1538-4357/ac97e5)
- DCM Palumbo et al.  
“Bayesian accretion modeling: axisymmetric equatorial emission in the Kerr spacetime .”  
*ApJ* 939, 2, 2022. doi:[10.3847/1538-4357/ac9ab7](https://doi.org/10.3847/1538-4357/ac9ab7)
- S Issaoun et al.  
“Resolving the inner parsec of the blazar J1924-2914 with the Event Horizon Telescope.”  
*ApJ* 934, 2, 2022. doi:[10.3847/1538-4357/ac7a40](https://doi.org/10.3847/1538-4357/ac7a40)
- J Farah, P Galison, K Akiyama, KL Bouman, G Bower, **A Chael** et al.  
“Selective dynamical imaging of interferometric data.”  
*ApJL* 930, L18, 2022. doi:[10.3847/2041-8213/ac6615](https://doi.org/10.3847/2041-8213/ac6615)
- The Event Horizon Telescope Collaboration et al.  
“First Sagittarius A\* Event Horizon Telescope Results I: the shadow of the supermassive black hole in the center of the Milky Way.”  
*ApJL* 930, L12, 2022. doi:[10.3847/2041-8213/ac6674](https://doi.org/10.3847/2041-8213/ac6674)
- The Event Horizon Telescope Collaboration et al.  
“First Sagittarius A\* Event Horizon Telescope Results II: EHT and multiwavelength observations, data processing, and calibration.”  
*ApJL* 930, L13, 2022. doi:[10.3847/2041-8213/ac6675](https://doi.org/10.3847/2041-8213/ac6675)
- The Event Horizon Telescope Collaboration et al.  
“First Sagittarius A\* Event Horizon Telescope Results IV: variability, morphology, and black hole mass.”  
*ApJL* 930, L15, 2022. doi:[10.3847/2041-8213/ac6736](https://doi.org/10.3847/2041-8213/ac6736)
- The Event Horizon Telescope Collaboration et al.  
“First Sagittarius A\* Event Horizon Telescope Results V: testing astrophysical models of the Galactic Center black hole.”  
*ApJL* 930, L16, 2022. doi:[10.3847/2041-8213/ac6672](https://doi.org/10.3847/2041-8213/ac6672)
- The Event Horizon Telescope Collaboration et al.  
“First Sagittarius A\* Event Horizon Telescope Results VI: testing the black hole metric.”  
*ApJL* 930, L17, 2022. doi:[10.3847/2041-8213/ac6756](https://doi.org/10.3847/2041-8213/ac6756)
- J Farah, P Galison, K Akiyama, KL Bouman, G Bower, **A Chael** et al.  
“Selective dynamical imaging of interferometric data.”  
*ApJL* 930, L18, 2022. doi:[10.3847/2041-8213/ac6615](https://doi.org/10.3847/2041-8213/ac6615)
- A Levis, P Srinivasan, **A Chael**, R Ng, KL Bouman.  
“Gravitationally lensed black hole emission tomography.”  
*IEEE CVPR*, 2022. doi:[10.1109/CVPR52688.2022.01922](https://doi.org/10.1109/CVPR52688.2022.01922)



- R Narayan, **A Chael**, K Chatterjee, A Ricarte, B Curd.  
“Jets in magnetically arrested accretion flows: geometry, power and black hole spindown.”  
*MNRAS* 511, p.3795-3813, 2022. doi:[10.1093/mnras/stac285](https://doi.org/10.1093/mnras/stac285)
- M Janssen et al.  
“Event Horizon Telescope observations of the jet launching and collimation in Centaurus A.”  
*Nat. Astron* 5, 2021. doi:[0.1038/s41550-021-01417-w](https://doi.org/0.1038/s41550-021-01417-w)
- K Akiyama, **A Chael**, D Pesce.  
“New views of black holes from computational imaging.”  
*Nature Computational Science*, 2021. doi:[10.1038/s43588-021-00078-z](https://doi.org/10.1038/s43588-021-00078-z)
- S Issaoun et al.  
“Persistant non-Gaussian structure in the image of Sagittarius A\* at 86 GHz.”  
*ApJ* 915, 2, 2021. doi:[10.3847/1538-4357/ac00b0](https://doi.org/10.3847/1538-4357/ac00b0)
- R Narayan et al.  
“The polarized image of a synchrotron-emitting ring of gas orbiting a black hole.”  
*ApJ* 912, 35, 2021. doi:[10.3847/1538-4357/abf117](https://doi.org/10.3847/1538-4357/abf117)
- M Wielgus et al.  
“Monitoring the morphology of M87\* in 2009-2017 with the Event Horizon Telescope.”  
*ApJ* 901, 67, 2020. doi:[10.3847/1538-4357/abac0d](https://doi.org/10.3847/1538-4357/abac0d)
- L Blackburn et al.  
“Closure statistics in interferometric data.”  
*ApJ* 894, 31, 2020. doi:[10.3847/1538-4357/ab8469](https://doi.org/10.3847/1538-4357/ab8469)
- J-Y Kim et al.  
“Event Horizon Telescope Imaging of the archetypal blazar 3C 279 at an extreme 20 microarcsecond resolution”  
*A&A* 640, A69, 2020. doi:[10.1051/0004-6361/202037493](https://doi.org/10.1051/0004-6361/202037493)
- MD Johnson et al.  
“Universal interferometric signatures of a black hole’s photon ring”  
*Science Advances* 6,12, 2020. doi:[10.1126/sciadv.aaz1310](https://doi.org/10.1126/sciadv.aaz1310)
- L Blackburn et al.  
“Studying black holes on horizon scales with VLBI arrays.”  
*Astro2020 White Paper* arXiv:[1909.01411](https://arxiv.org/abs/1909.01411)
- The Event Horizon Telescope Collaboration et al.  
“First M87 Event Horizon Telescope Results I: the shadow of the supermassive black hole.”  
*ApJL* 875, L1, 2019. doi:[10.3847/2041-8213/ab0ec7](https://doi.org/10.3847/2041-8213/ab0ec7)

- The Event Horizon Telescope Collaboration et al.  
 “First M87 Event Horizon Telescope Results II: array and instrumentation.”  
*ApJL* 875, L2, 2019. doi:[10.3847/2041-8213/ab0c96](https://doi.org/10.3847/2041-8213/ab0c96)
- The Event Horizon Telescope Collaboration et al.  
 “First M87 Event Horizon Telescope Results III: data processing and calibration.”  
*ApJL* 875, L3, 2019. doi:[10.3847/2041-8213/ab0c57](https://doi.org/10.3847/2041-8213/ab0c57)
- The Event Horizon Telescope Collaboration et al.  
 “First M87 Event Horizon Telescope Results V: physical origin of the asymmetric ring.”  
*ApJL* 875, L5, 2019. doi:[10.3847/2041-8213/ab0f43](https://doi.org/10.3847/2041-8213/ab0f43)
- The Event Horizon Telescope Collaboration et al.  
 “First M87 Event Horizon Telescope Results VI: the shadow and mass of the central black hole.”  
*ApJL* 875, L6, 2019. doi:[10.3847/2041-8213/ab1141](https://doi.org/10.3847/2041-8213/ab1141)
- S Issaoun et al.  
 “VLBI imaging of black holes via second moment regularization.”  
*A&A* 629, A32, 2019. doi:[10.1051/0004-6361/201936156](https://doi.org/10.1051/0004-6361/201936156)
- S Issaoun et al.  
 “The size, shape and scattering of Sagittarius A\* at 86 GHz: first VLBI with ALMA.”  
*ApJ* 871, 30, 2019. doi:[10.3847/1538-4357/aaf732](https://doi.org/10.3847/1538-4357/aaf732)
- W Lu, C Dvorkin, **A Chael**.  
 “Probing sub-GeV dark matter-baryon scattering with cosmological observables.”  
*Physical Review D* 97, 103530, 2018. doi:[10.1103/PhysRevD.97.103530](https://doi.org/10.1103/PhysRevD.97.103530)
- KL Bouman, MD Johnson, A Dalca, **A Chael** et al.  
 “Reconstructing video from interferometric measurements of time-varying sources.”  
*IEEE Trans. Comp. Imaging*, 2018. doi:[10.1109/TCI.2018.2838452](https://doi.org/10.1109/TCI.2018.2838452)
- MD Johnson, KL Bouman, L Blackburn, **A Chael** et al.  
 “Dynamical imaging with interferometry.”  
*ApJ* 850, 172, 2018. doi:[10.3847/1538-4357/aa97dd](https://doi.org/10.3847/1538-4357/aa97dd)
- A Sadowski, M Wielgus, R Narayan, D Abarca, J McKinney, **A Chael**.  
 “Radiative, two-temperature simulations of low-luminosity black hole accretion flows in general relativity.”  
*MNRAS* 466, p.705-725, 2018. doi:[10.1093/mnras/stw3116](https://doi.org/10.1093/mnras/stw3116)
- V Fish et al.  
 “Persistent asymmetric structure of Sagittarius A\* on event horizon scales.”  
*ApJ* 820, 90, 2016. doi:[10.3847/0004-637X/820/2/90](https://doi.org/10.3847/0004-637X/820/2/90)

- MD Johnson et al.  
“Resolved magnetic field structure and variability near the event horizon of Sagittarius A\*.”  
*Science* 350, p.1242-1245, 2015. doi:[10.1126/science.aac7087](https://doi.org/10.1126/science.aac7087)
- MD Johnson, A Loeb, H Shiokawa, **A Chael**, SS Doeleman.  
“Measuring the direction and angular velocity of a black hole accretion disk via lagged interferometric covariance.”  
*ApJ* 813, 132, 2015. doi:[10.1088/0004-637X/813/2/132](https://doi.org/10.1088/0004-637X/813/2/132)
- P Verbiest, JM Weisberg, **A Chael**, K Lee, D Lorimer.  
“On pulsar distance measures and their uncertainties.”  
*ApJ* 775, 39, 2012. doi:[10.1088/0004-637X/755/1/39](https://doi.org/10.1088/0004-637X/755/1/39)

INVITED TALKS “Black Hole Energy Extraction from Polarized Images”  
*Northwestern University, CIERA Theory Lunch*  
Evanston, Illinois. April 2025.

“Black Hole Jet Launching Up Close”  
*ASIAA Colloquium*  
Taipei, Taiwan. March 2025.

“Black Hole Images with the EHT: Features, Uncertainties, and Interpretation”  
*Black Hole Mimickers: From Theory to Observation*  
Princeton, NJ. March 2025.

“Next Steps in Simulations for the EHT”  
*EHT Collaboration Winter Meeting*  
Virtual. December 2024.

“Black Hole Jet Launching Up Close”  
*Paris Observatory LUTH Seminar*  
Paris, France. November 2024.

“The Black Hole Explorer”  
*Princeton-IAS Bahcall Lunch*  
Princeton, NJ. October 2024.

“Simulating and Imaging Black Holes”  
*The Event Horizon and Beyond: 50 Years of Narayan*  
Cambridge, MA. June 2024.

“Polarized Signatures of Jet Launching on Horizon Scales”  
*EHT Collaboration Summer Meeting*  
Mexico City, MX. May 2024.

“Polarization Signatures of Jet Launching on Horizon Scales”  
*AAS HEAD Meeting*  
Horseshoe Bay, TX. April 2024.

“Black Hole Jet Launching Up Close”

*Harvard BHI Colloquium*

Cambridge, MA. March 2024.

“New Physics from Polarized Black Hole Images”

*National Taiwan University Astronomy Seminar*

Virtual. January 2024.

“Black Holes in Polarized Light”

*Radboud University Astronomy Colloquium*

Nijmegen, Netherlands. December 2023.

“Black Holes in Polarized Light”

*Vanderbilt University, VandyGRAF Seminar*

Nashville, TN. December 2023.

“M87\* in Polarized Light”

Simons Collaboration on Extreme Electrodynamics of Compact Sources Meeting

Virtual. November 2023.

“Polarization spirals, energy extraction, and black hole spin”

*Princeton-IAS Bahcall Lunch*

Princeton, NJ. May 2023.

“The black hole-jet connection in simulations of M87”

*Hamilton Workshop on Kinetic Models of Relativistic Plasmas*

Dublin, Ireland. February 2023.

“Horizon-scale images of black hole accretion and jet launching”

*Duke University Physics Colloquium*

Durham, NC. February 2023.

“Horizon-scale images of black hole accretion and jet launching”

*UC Berkeley Astronomy Colloquium*

Berkeley, CA. February 2023.

“Imaging supermassive black holes with the Event Horizon Telescope”

*Bard College Physics Colloquium*

Annandale-on-Hudson, NY. November 2022.

“Multifrequency imaging for the ngEHT”

*Broadening Horizons Workshop*

Cambridge, MA. August 2022.

“Supermassive black holes and relativistic jets: insights from simulations and EHT observations”

*IAU Focus Meeting 1*

Busan, Korea. August 2022

“Polarization with the Event Horizon Telescope”

*EHT Collaboration Summer Meeting*

Granada, Spain. June 2022.

“Dynamic Imaging and Modeling of Sgr A\*”

*EHT US Focus Meeting*

Tucson, Arizona. November 2021.

“Imaging supermassive black hole accretion flows: magnetic fields, jets, and inner shadows”

*Princeton Gravity Initiative Seminar*

Princeton, NJ. September 2021

“Observing the inner shadow of a black hole”

*Goethe University Frankfurt Astronomy Seminar*

Virtual. July 2021.

“Accretion, jet launching, and magnetic fields in M87 revealed by the EHT”

*Event Horizon Telescope Summer Meeting*

Virtual. June 2021.

“Magnetic fields at a supermassive black hole’s event horizon”

*CU Boulder Astronomy Colloquium*

Virtual. April 2021.

“Magnetic fields at the event horizon in M87”

*Princeton Center for Theoretical Science Seminar*

Virtual. April 2021.

“ngEHT insights from radiative simulations: jets and lensed horizons”

*Next-Generation Event Horizon Telescope Science Meeting*

Virtual. February 2021.

“The eht-imaging software library”

*Event Horizon Telescope Winter Collaboration Meeting*

Virtual. December 2020.

“Photographing a black hole with the Event Horizon Telescope”

*SciPy 2020 Keynote*

Virtual. July 2020.

“Towards understanding black hole accretion and jet launching”  
*APS April Virtual Meeting*  
 Virtual. April 2020.

“VLBI imaging techniques.”  
*University of Arizona BH PIRE Webinar*  
 Virtual. March 2020.

“Photographing a black hole with the Event Horizon Telescope.”  
*NMSU College of Engineering Distinguished Lecture Series*  
 Las Cruces, NM. February 2020.

“The black hole and jet in M87: connecting simulations and VLBI images.”  
*Princeton Gravity Group Meeting*  
 Princeton, NJ. November 2019.

“The black hole and jet in M87: connecting simulations and VLBI images.”  
*Caltech TAPIR Seminar*  
 Pasadena, CA. November 2019.

“The black hole and jet in M87: connecting simulations and VLBI images.”  
*University of Waterloo Astronomy Seminar*  
 Waterloo, ON. October 2019.

“In the shadow of the black hole.”  
*GitHub Satellite 2019*  
 Berlin, Germany. May 2019.

“Reconstructing an image of the black hole in M87 from EHT data.”  
*2019 Black Hole Initiative Conference*  
 Cambridge, MA. May 2019.

“Photographing a black hole with the Event Horizon Telescope.”  
*Carleton College Physics Special Lecture.*  
 Northfield, MN. May 2019.

“Simulating and imaging supermassive black hole accretion flows.”  
*Black Hole Initiative Colloquium.*  
 Cambridge, MA. May 2019.

“Two-temperature, radiative, MAD simulations of the supermassive black hole in M87.”  
*Center for Astrophysics ITC lunch. (Keto Prize Talk).*  
 Cambridge, MA. May 2019.

“Photographing black holes: first results from the Event Horizon Telescope.”  
*Harvard University Special Colloquium.*  
 Cambridge, MA. April 2019.

“What will the EHT see? Electron heating in simulations of Sgr A\* and M87.”  
*Columbia Astronomy Thursday Seminar.*  
 New York, NY. November 2018.

“Electron heating and particle acceleration in GRMHD simulations of Sgr A\*.”  
*The Central Arcsecond: Towards Testing GR in the Galactic Center.*  
 Ringberg, Germany. November 2018.

“What will the EHT see? Electron heating in simulations of Sgr A\* and M87.”  
*Northwestern CIERA Theory Group Meeting.*  
 Evanston, IL. October 2018.

“Imaging a black hole with the Event Horizon Telescope.”  
*907<sup>th</sup> Amateur Telescope Makers of Boston Monthly Meeting.*  
 Cambridge, MA. March 2018.

“Imaging techniques for the Event Horizon Telescope.”  
*3<sup>rd</sup> Event Horizon Telescope Collaboration Meeting.*  
 Cambridge, MA. December 2016.

“Probing Dynamical Activity near the Event Horizon with the EHT.”  
*2nd Event Horizon Telescope Collaboration Meeting.*  
 Waterloo, ON. November 2014.

#### INTERVIEWS & MEDIA

*The Postdoc Path Podcast* [September 12, 2024](#)  
*Physics Magazine* [March 15, 2024](#)  
*New Scientist* [November 24, 2023](#)  
*Physics Magazine* [February 11, 2022](#)  
*Black Holes: The Edge of All We Know* Documentary [2021](#)  
*Quanta Magazine* [May 20, 2021](#)  
*The New York Times* [March 24, 2021](#)  
*Inverse* [March 24, 2021](#)  
*New Scientist* [March 24, 2021](#)  
*Carleton College Voice* [Winter 2020](#)  
*Undark podcast* [March 30, 2019](#)  
*The Washington Post* [March 12, 2019](#)  
*WIRED.com* [March 4, 2019](#)