

HYERIN CHO (조혜린)

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[Website](#) ◇ [Google Scholar](#) ◇ [Github](#)

RESEARCH INTERESTS

High-energy astrophysics; Black holes; General relativity; Plasma physics; Galaxy evolution; GRMHD simulations; Accretion; Relativistic Jets

EDUCATION

Harvard University, USA expected May 2026

Ph.D. in Astronomy and Astrophysics

Advisor: Ramesh Narayan

Committee: Lars Hernquist (chair), Ramesh Narayan, John Raymond, Aneta Siemiginowska

GIST(Gwangju Institute of Science and Technology), Korea Feb. 2020

B.S. Physics Major / Math Minor (*cum laude*)

California Institute of Technology, USA Dec. 2017

Study Abroad Program

RESEARCH EXPERIENCE

Black Hole Initiative, Harvard University, Graduate Research Assistant 2020 - present

Advisor: Prof. Ramesh Narayan

Black hole (BH) accretion and feedback using GRMHD simulations and analytical models

Seoul National University, Visiting Student Intern 2020

Advisor: Prof. Ji-hoon Kim

Accretion onto massive BHs in galaxy simulations

OzGrav, Swinburne University of Technology, Visiting Student Intern 2019

Advisors: Prof. Matthew Bailes, Prof. Adam Deller, Prof. Ryan Shannon

High time resolution analysis on Fast Radio Bursts (FRBs)

Curtin Institute of Radio Astronomy (CIRA), Summer Studentship 2019

Advisors: Prof. Jean-Pierre Macquart, Dr. Clancy James, Dr. Ian Morrison

Development to recover the full time resolution of FRB voltage data

Caltech Theoretical Astrophysics, Summer Undergraduate Research Fellow 2018

Advisor: Prof. Sterl Phinney

Numerical modeling of time-independent accretion discs with instabilities

PUBLICATIONS

h-index: 9, citations > 600 (11/01/2025) [Google Scholar](#), [ads](#), [arXiv](#)

First-author articles

1. **Cho H.**, Prather B. S., Narayan R., Su K.-Y., Natarajan P., 2025, [accepted to ApJ](#), “*Bridging Scales in Black Hole Accretion and Feedback: Relativistic Jet linking the Horizon to the Host Galaxy*”
2. **Cho H.** and Narayan R., 2025, [ApJ](#), 991, “*Variability in Black Hole Accretion: Dependence on Rotational and Magnetic Energy Balance*”
3. **Cho H.**, Prather B. S., Su K.-Y., Narayan R., Natarajan P., 2024, [ApJ](#), 977, “*Multizone Modeling of Black Hole Accretion and Feedback in 3D GRMHD: Bridging Vast Spatial and Temporal Scales*”

4. **Cho H.**, Prather B. S., Narayan R., Natarajan P., Su K.-Y., Ricarte A., Chatterjee K., 2023, [ApJL](#), 959, “*Bridging Scales in Black Hole Accretion and Feedback: Magnetized Bondi Accretion in 3D GRMHD*”
• featured in [AASnova](#)
5. **Cho H.** and Narayan R., 2022, [ApJ](#), 932, “*Analytical Model of Disk Evaporation and State Transitions in Accreting Black Holes*”
6. **Cho H.**, Macquart J.-P., Shannon R. M., Deller A. T., Morrison I. S., Ekers R. D., Bannister K. W., et al., 2020, [ApJL](#), 891, “*Spectropolarimetric analysis of FRB 181112 at microsecond resolution: Implications for Fast Radio Burst emission mechanism*”
• featured in [astrobit](#)

Co-authored articles

1. Su K.-Y., Ricarte A., Natarajan P., Porras-Valverde A. J., **Cho H.**, Narayan R., Faucher-Giguère C.-A., et al., 2025, [submitted to ApJL](#), “*Bridging scales: How much do supermassive black holes grow in the suppressed Bondi regime?*”
2. Porras-Valverde A. J., Natarajan P., Ricarte A., Su K.-Y., **Cho H.**, Narayan R., Prather B. S., 2025, [submitted to ApJ](#), “*Bridging scales: Modeling suppressed Bondi accretion on black holes and its impact on galaxy growth*”
3. Su K.-Y., Natarajan P., **Cho H.**, Narayan R., Hopkins P. F., Anglés-Alcázar D., Prather B. S., 2025, [ApJL](#), 981, “*Bridging Scales: Coupling the Galactic Nucleus to the Larger Cosmic Environment*”
4. Sutinjo A. T., Scott D. R., James C. W., Glowacki M., Bannister K. W., **Cho H.**, Day C. K., et al., 2023, [ApJ](#), 954, “*Calculation and Uncertainty of Fast Radio Burst Structure Based on Smoothed Data*”
5. Scott D. R., **Cho H.**, Day C. K., Deller A. T., Glowacki M., Gourdji K., Bannister K. W., et al., 2023, [A&C](#), 44, “*CELEBI: The CRAFT Effortless Localisation and Enhanced Burst Inspection pipeline*”
6. Bhandari S., Bannister K. W., Lenc E., **Cho H.**, Ekers R., Day C. K., Deller A. T., et al., 2020, [ApJL](#), 901, “*Limits on precursor and afterglow radio emission from a fast radio burst in a star-forming galaxy*”
7. Sammons M. W., Macquart J.-P., Ekers R. D., Shannon R. M., **Cho H.**, Prochaska J. X., Deller A. T., et al., 2020, [ApJ](#), 900, “*First constraints on compact dark matter from Fast Radio Burst microstructure*”
8. Prochaska J. X., ..., **Cho H.**, ... 2019 [Science](#), 366, “*The low density and magnetization of a massive galaxy halo exposed by a fast radio burst*”

PRESENTATIONS

Seminars & Colloquia & Meetings († invited)

1. † Kavli Institute for Particle Astrophysics and Cosmology (KIPAC) Tea Talk (online) Nov. 2025
2. † Theoretical High Energy Astrophysics Group meeting (Columbia, USA) Nov. 2025
3. † CCA Stars & Plasma Astrophysics group meeting (CCA, USA) Nov. 2025
4. † Bahcall lunch talks (IAS, USA) Nov. 2025
5. † TAPIR seminar / Astronomy Tea Talks (Caltech, USA) Oct. 2025
6. † CIERA Theory Group Meeting (Northwestern, USA) Oct. 2025
7. † CCA-NY area community galaxy formation seminar (CCA, USA) Oct. 2025
8. † EHT theory working group (online) Sep. 2025
9. Umbrella Dialogues (Harvard, USA) Jan. 2025
10. † Quataert group meeting (Princeton, USA) Nov. 2024

11. † Astro coffee (IAS, USA)	Nov. 2024
12. † Strong Gravity Seminar (Perimeter Institute, Canada)	Apr. 2024
13. † Plasma-astro meeting (CITA, Canada)	Apr. 2024
14. † University of Illinois Urbana-Champaign Journal Club (online)	Feb. 2024
15. ITC luncheon talks (Harvard, USA)	Feb. 2024
16. Kim group meeting (Seoul National University, Korea)	Jan. 2024
17. † ITC luncheon talks (Harvard, USA)	Mar. 2023
18. † ZARM Accretion disk and relativistic astrophysics (online)	Nov. 2022
19. † Curtin University Colloquium (online)	May 2022

Conference & Workshop († invited)

1. † Talk The multiscale environment of AGN across cosmic time (MPA, Germany) “ <i>Bridging Scales in Black Hole Accretion and Feedback: Relativistic Jet linking the Horizon to the Host Galaxy</i> ”	2025
2. Talk Deciphering Cosmic Code for Galaxy Formation (Puerto Varas, Chile) “ <i>Bridging Scales in Black Hole Accretion and Feedback in GRMHD</i> ”	2024
3. Talk Tinsley Workshop (Yale, USA) “ <i>Bridging Scales in the Black Hole Accretion-Feedback</i> ”	2024
4. Talk Bridging Scales Workshop (Harvard, USA) “ <i>Simulations of Coupled Feeding & Feedback</i> ”	2024
5. Talk The Event Horizon and Beyond - Celebrating 50 Years of Narayan (Harvard, USA) “ <i>Bridging Scales in AGN Accretion and Feedback</i> ”	2024
6. Talk Resolving Galaxy Ecosystems Across All Scales (CUHK, Hong Kong) “ <i>Bridging scales between supermassive black holes and their host galaxies via multi-annuli approach</i> ”	2023
7. Talk Black Holes on Broadway: The Next Generation of AGN Models in Galaxy Formation (CCA, USA) “ <i>Bridging Scales between Supermassive Black Holes and Their Host Galaxies via Multi-annuli Approach</i> ”	2023
8. Talk Boston-Area Blackhole Accretion Meeting (BABAM!) (Harvard, USA) “ <i>Bridging Scales in Black Hole Accretion and Feedback</i> ”	2023
9. Poster AAS (Pasadena, USA) “ <i>Analytical Model of Disk Evaporation and State Transitions in Accreting Black Holes</i> ”	2022
10. Talk ngEHT meeting (Granada, Spain) “ <i>Analytical Model of Disk Evaporation and State Transitions in Accreting Black Holes</i> ”	2022
11. Talk New England Regional Quasar and AGN Meeting (NERQUAM) (UConn, USA) “ <i>Analytical Model of Disk Evaporation and State Transitions in Accreting Black Holes</i> ”	2022

AWARDS & FELLOWSHIPS

ACCESS Explore (PI: Hyerin Cho , PHY250303)	2025 - present
ACCESS Maximize (PI: Ramesh Narayan, AST080028)	2024 - 2025
ACCESS Explore (PI: Hyerin Cho , PHY230079)	2023 - 2024
Ilju Foundation Study Abroad Scholarship Selected as 1 of 6 recipients nationwide in Korea across all disciplines for a prestigious doctoral scholarship (\sim \$120,000 USD over four years) awarded to support Ph.D. studies abroad.	2020 - 2024
Talent Award of Korea (대한민국인재상)	2020

Awarded by the South Korean government to outstanding young leaders demonstrating excellence, creativity, and public service. Selected as one of the top national recipients representing Korea's next-generation talent.

GIST Outstanding Thesis Award (우수논문상) 2020

GIST Future Research Talent Award (미래인재상) 2020

Korea National Science and Engineering Scholarship ([국가이공계장학금](#)) 2015 - 2020

A scholarship to fund full tuition for 8 semesters from Korea Student Aid Foundation, Ministry of Education

TEACHING EXPERIENCE

Harvard University

Teaching Assistant Galactic and Extragalactic Astronomy (undergraduate course) Fall 2022

Teaching Assistant Radiative Processes in Astrophysics (graduate course) Fall 2021

GIST

Teaching Assistant Introduction to Topology (4th-year course) Fall 2019

Teaching Assistant Electromagnetism II (3rd-year course) Spring 2018

SERVICE, OUTREACH, ORGANIZATIONAL EXPERIENCE

Outreach

- Black Hole Scholars talk at Valle Verde Early College High School 2025
- Astronomy on Tap talk 2025
- Crescent Street Halloween Party "Ask an Astrophysicist" 2025
- Research Talk for Harvard-Smithsonian Science Research Mentoring Program (SRMP) 2024
- Black Hole Scholars talk at Buckingham Browne & Nichols School 2024
- Interviewed as a guest of an episode of [Astrophiz](#) podcast 2023
- Translating articles in Korean for World of Women in STEM (WOWSTEM) [website](#) 2022 -
- Women in STEM (WiSTEM) Mentor 2020 - 2021

Peer Review: Nature astronomy 2021

Conference Services

- **Local Organizing Committee** [RN50 Conference](#) The Event Horizon and Beyond - Celebrating 50 Years of Narayan 2024
- **Session Chair** 7th Annual [Black Hole Initiative Conference](#) 2024
- **Local Organizing Committee** [Bridging Scales Workshop](#) 2024
- **Local Organizing Committee** Boston-Area Blackhole Accretion Meeting (BABAM!) 2023

Narayan Group Meeting Organizer 2023 - present

REFERENCES

Ramesh Narayan

Thomas Dudley Cabot Professor of the Natural Sciences

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Priyamvada Natarajan

Joseph S. and Sophia S. Fruton Professor of Astronomy and Professor of Physics

Chair of Department of Astronomy

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