

# Angelo R. Ricarte

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## Scientific Interests

The multi-scale problem of supermassive black hole formation, assembly, and feedback from event horizon to cosmological scales. Member of the Event Horizon Telescope collaboration.

## Positions Held

- ❖ **Harvard-Smithsonian Center for Astrophysics** (2019-present): ITC Post-doctoral Fellow  
Advisor: Ramesh Narayan

## Education

- ❖ **Yale University** (2013-2019): Ph.D. in Astronomy  
Advisor: Priyamvada Natarajan  
Thesis: The Assembly of Supermassive Black Holes, from the Seeding Epoch to the Present Day
- ❖ **University of California at Berkeley** (2009-2013): B.A. in Astrophysics and Applied Mathematics, High Honors  
Advisor: Jason Dexter  
Thesis: The Event Horizon Telescope: Exploring Strong Gravity and Accretion Physics

## Honors and Distinctions

- ❖ Brouwer Prize (2020): Awarded by the Yale astronomy department to students for contributions of unusual merit to any branch of astronomy.
- ❖ NASA Earth and Space Science Fellowship (2017-2020): Funding awarded to graduate students whose research furthers NASA's science goals. (Recently renamed FINESST.)
- ❖ Beatrice Tinsley Award (2017): Best astronomy paper written by a Yale astronomy graduate student in 2016.
- ❖ Gruber Science Fellowship (2013-2020): Yale University's most prestigious award to highly ranked incoming Ph.D. students in life sciences, cosmology, and astrophysics
- ❖ Daniel Edward Wark Award (2012): Awarded to outstanding undergraduates in astronomy at U.C. Berkeley
- ❖ Edward Kraft Award (2010): Awarded to undergraduates who maintain a 4.000 GPA throughout their first year
- ❖ Regents' and Chancellor's Scholarship (2009): U.C. Berkeley's most prestigious award to highly ranked incoming undergraduates

## Selected Seminars and Conference Presentations

- ❖ The Frontiers of Event Horizon Scale Accretion, KITP 2020: Internal Faraday Rotation of Black Hole Accretion Flows

- ❖ Accretion History of AGN (AHA), U. Miami 2019: Modeling the AGN-Galaxy Connection with Sims and SAMs
- ❖ Young Astronomers on Galactic Nuclei (YAGN), Tenerife 2019: Black Hole-Galaxy Coevolution in the Romulus Simulations
- ❖ Wesleyan University Astronomy Colloquium 2018: Modeling the Supermassive Black Hole-Galaxy Connection Over Cosmic Time
- ❖ Black Hole Initiative Colloquium 2018: Modeling the Black Hole-Galaxy Connection Over Cosmic Time

### Skills

- ❖ Versatile programmer competent with Python and C.
- ❖ Expertise in cosmological simulations, semi-analytic/empirical models for black hole evolution, general relativistic polarized radiative transfer and ray-tracing.
- ❖ Experience making theoretical predictions for (very long baseline) interferometry, next generation X-ray telescopes, and gravitational waves.
- ❖ Observational experience with both radio interferometry (EHT, SMA, CARMA), and high energy X-ray telescopes (NuSTAR, Chandra, XMM-Newton).

### Public Outreach

- ❖ LISA Ambassadors Program (2019-present): I am part of a group to help communicate LISA science to the broader public.
- ❖ Leitner Observatory and Planetarium (2014-2019): I regularly presented planetarium shows and helped the facility with public observing nights. I gave a public talk on supermassive black holes in February 2018, and a guest talk in June 2020.
- ❖ Open Labs Science Café (2019): I presented a public talk to high school students interested in science.
- ❖ Astronomy On Tap (2019): I presented a public talk in a local bar in New Haven.

### First-author Refereed Publications

- ❖ “Decomposing the Internal Faraday Rotation of Black Hole Accretion Flows”, **A. Ricarte**, B. S. Prather, G. N. Wong, R. Narayan, C. Gammie, and M. D. Johnson, 2020, accepted by MNRAS, arXiv:2009.02369
- ❖ “A Link Between Ram Pressure Stripping and Active Galactic Nuclei,” **A. Ricarte**, M. Tremmel, P. Natarajan, and T. Quinn, 2020, ApJ, 895L, 8
- ❖ “The Clustering of Undetected High-redshift Black Holes and their Signatures in Cosmic Backgrounds,” **A. Ricarte**, F. Pacucci, N. Cappelluti, and P. Natarajan, 2019, MNRAS, 489, 1006
- ❖ “Tracing Black Hole and Galaxy Co-evolution in the Romulus Simulations,” **A. Ricarte**, M. Tremmel, P. Natarajan, and T. Quinn, MNRAS, 489, 802
- ❖ “The Observational Signatures of Supermassive Black Hole Seeds,” **A. Ricarte** and P. Natarajan, 2018, MNRAS, 481, 3278
- ❖ “Exploring Supermassive Black Hole Assembly with Semi-analytic Modelling,” **A. Ricarte** and P. Natarajan, 2018, MNRAS, 474, 1995
- ❖ “Tidal Disruption Events by a Massive Black Hole Binary,” **A. Ricarte**, P. Natarajan, L. Dai, and P. Coppi, 2016, MNRAS, 458, 1712
- ❖ “The Event Horizon Telescope: exploring strong gravity and accretion physics”, **A. Ricarte** and J. Dexter, 2015, MNRAS, 446, 1973
- ❖ “Resolving the Moth at Millimeter Wavelengths”, **A. Ricarte**, N. Moldvai, A. M. Hughes, G. Duchene, J. Williams, S. Andrews, D. Wilner, 2013, ApJ, 774, 80

### Additional Refereed Publications

- ❖ “Introducing RomulusC: A Cosmological Simulation of a Galaxy Cluster with Unprecedented Resolution,” M. Tremmel, T. Quinn, **A. Ricarte**... et al., 2019, MNRAS, 483, 3336
- ❖ “The Chandra COSMOS Legacy Survey: Energy Spectrum of the Cosmic X-Ray Background and Constraints on Undetected Populations,” N. Cappelluti, Y. Li, **A. Ricarte**... et al., 2017, ApJ, 837, 19
- ❖ “Unveiling the first black holes with JWST: multi-wavelength spectral predictions,” P. Natarajan, F. Pacucci, A. Ferrara, B. Agarwal, **A. Ricarte**, E. Zackrisson, and N. Cappelluti, 2017, ApJ, 838, 117
- ❖ “Peering through the Dust: NuSTAR Observations of Two FIRST-2MASS Red Quasars,” S. LaMassa, **A. Ricarte**, Eilat Glikman, C. Megan Urry, et al., 2016, ApJ, 820, 70
- ❖ “Resolved Millimeter-wavelength Observations of Debris Disks around Solar-type Stars,” A. Steele, A. M. Hughes, J. Carpenter, **A. Ricarte**, et al., 2016, ApJ, 816, 27

### White Papers

- ❖ “Disentangling Nature from Nurture: Tracing the Origin of Seed Black Holes,” P. Natarajan, **A. Ricarte**, et al., 2019, Astro2020: Decadal Survey on Astronomy and Astrophysics, 51, 73