SIYANG LI

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Baltimore, Maryland, United States

EDUCATION

Johns Hopkins University
Doctor of Philosophy in Astronomy & Astrophysics (Expected 2025) — *2020 - Current*
Master of Arts in Physics — *2020 - 2023*
Thesis Advisor: Professor Adam G. Riess (2011 Nobel Laureate in Physics)

University of California, Berkeley
Bachelor of Arts, High Honors in Physics, cum laude — *2016 - 2020*
Thesis Advisor: Professor George F. Smoot III (2006 Nobel Laureate in Physics)

FIRST AUTHOR PUBLICATIONS

Total citations as of February 20, 2024 : 103
ORCID ID: 0000-0002-8623-1082

11. **Siyang Li**, Adam G. Riess, Daniel Scolnic, Stefano Casertano, Gagandeep S. Anand. "JAGB 2.0: Improved Constraints on the J-region Asymptotic Giant Branch-based Hubble Constant from an Expanded Sample of JWST Observations", *Submitted to The Astrophysical Journal*, arXiv: 2502.05259, NASA ADS: https://ui.adsabs.harvard.edu/abs/2025arXiv250205259L/abstract.

10. **Siyang Li**, Gagandeep S. Anand, Adam G. Riess, Stefano Casertano, Wenlong Yuan, Louise Breuval, Lucas M. Macri, Daniel Scolnic, Rachael Beaton, Richard I. Anderson. "Tip of the Red Giant Branch Distances with *JWST*. II. I-band Measurements in a Sample of Hosts of 10 SN Ia Match *HST* Cepheids", *The Astrophysical Journal*, 976 177 (November 21, 2024), NASA ADS: https://ui.adsabs.harvard.edu/abs/2024ApJ...976..177L/abstract.

9. **Siyang Li**, Adam G. Riess, Stefano Casertano, Gagandeep S. Anand, Daniel M. Scolnic, Wenlong Yuan, Louise Breuval, Caroline D. Huang. "Reconnaissance with *JWST* of the J-region Asymptotic Giant Branch in Distance Ladder Galaxies: From Irregular Luminosity Functions to Approximation of the Hubble Constant", *The Astrophysical Journal*, 966 20 (April 23, 2024), NASA ADS: https://ui.adsabs.harvard.edu/abs/2024ApJ...966...20L/abstract.

8. **Siyang Li**, Adam G. Riess, Daniel Scolnic, Gagandeep S. Anand, Jiaxi Wu, Stefano Casertano, Wenlong Yuan, Rachael Beaton, Richard I. Anderson. "Standardized Luminosity of the Tip of the Red Giant Branch utilizing Multiple Fields in NGC 4258 and the CATs Algorithm", *The Astrophysical Journal*, 956 32 (October 5, 2023), NASA ADS: https://ui.adsabs.harvard.edu/abs/2023ApJ...956...32L/abstract.

7. **Siyang Li**, Stefano Casertano, Adam G. Riess. "A *Gaia* Data Release 3 View on the Tip of the Red Giant Branch Luminosity", *The Astrophysical Journal*, 950 83 (June 13 2023), NASA ADS: https://ui.adsabs.harvard.edu/abs/2023ApJ...950...83L/abstract.

6. **Siyang Li**, Stefano Casertano, Adam G. Riess. "A Maximum Likelihood Calibration of the Tip of the Red Giant Branch Luminosity from High Latitude Field Giants using *Gaia* Early Data Release 3 Parallaxes", *The Astrophysical Journal*, 939 96 (November 10, 2022), NASA ADS: https://ui.adsabs.harvard.edu/abs/2022ApJ...939...96L/abstract.

5. **Siyang Li**, Adam G. Riess, Michael Busch, Stefano Casertano, Lucas Macri, Wenlong Yuan. "A sub-2% Distance to M31 from Photometrically Homogeneous Near-Infrared Cepheid Period-Luminosity Relations Measured with the *Hubble Space Telescope*", *The Astrophysical Journal*, 920 84 (October 18, 2021), NASA ADS: https://ui.adsabs.harvard.edu/abs/2021ApJ...920...84L/abstract.

4. **Siyang Li**, George F. Smoot III. "Characterization of a high efficiency silicon photomultiplier for millisecond to sub-microsecond astrophysical transient searches", in [*Society of Photo-Optical Instrumentation Engineers (SPIE) Astronomical Telescopes + Instrumentation; X-Ray, Optical, and Infrared Detectors for Astronomy IX*], *SPIE Proceedings 11454*, 1145422 (December 13, 2020), NASA ADS: https://ui.adsabs.harvard.edu/abs/2020SPIE11454E..22L/abstract.

3. **Siyang Li**, George F. Smoot III, Bruce Grossan, Albert Wai Kit Lau, Marzhan Bekbalanova, Mehdi Shafiee, Thorsten Stezelberger. "Program objectives and specifications for the Ultra-Fast Astronomy observatory", in [*8th Applied Optics and Photonics China; Space Optics, Telescopes and Instrumentation*], *SPIE Proceedings 11341*, 113411Y (December 18, 2019), NASA ADS: https://ui.adsabs.harvard.edu/abs/2019SPIE11341E..1YL/abstract.

2. **Siyang Li**, George F. Smoot III. "Characterization of a silicon photomultiplier for the Ultra-Fast Astronomy telescope", in [*SPIE Optics + Photonics; UV/Optical/IR Space Telescopes and Instruments: Innovative Technologies and Concepts IX*], *SPIE Proceedings 11115*, 111150A (September 9, 2019), NASA ADS: https://ui.adsabs.harvard.edu/abs/2019SPIE11115E..0AL/abstract.

1. **Siyang Li**, Jérôme Maire, Maren Cosens, Shelley A. Wright. "Detector characterization of a near-infrared discrete avalanche photodiode 5x5 array for astrophysical observations", in [*SPIE Defense + Commercial Sensing; Infrared Technology and Applications XLV*], *SPIE Proceedings 11002*, 110022G (May 7, 2019), NASA ADS: https://ui.adsabs.harvard.edu/abs/2019SPIE11002E..2GL/abstract.

CO-AUTHOR PUBLICATIONS

Total citations as of February 20, 2024 : 141

7. Rolf-Peter Kudritzki, Miguel A. Urbaneja, Fabio Bresolin, Lucas M. Macri, Wenlong Yuan, **Siyang Li**, Gagandeep S. Anand, Adam G. Riess. "The Hubble Constant Anchor Galaxy NGC 4258: Metallicity and Distance from Blue Supergiants", *The Astrophysical Journal*, 977 217 (December 16, 2024), NASA ADS: https://ui.adsabs.harvard.edu/abs/2024ApJ...977..217K/abstract.

6. Adam G. Riess, Dan Scolnic, Gagandeep S. Anand, Louise Breuval, Stefano Casertano, Lucas M. Macri, **Siyang Li**, Wenlong Yuan, Caroline D. Huang, Saurabh Jha, Yukei S. Murakami, Rachael Beaton, Dillon Brout, Tianrui Wu, Graeme Addison, Charles Bennett, Richard Anderson, Alexei Filippenko, Anthony Carr. "*JWST* Validates *HST* Distance Measurements: Selection of Supernova Subsample Explains Differences in *JWST* Estimates of Local H_0", *The Astrophysical Journal*, 977 120 (December 9, 2024), NASA ADS: https://ui.adsabs.harvard.edu/abs/2024ApJ...977..120R/abstract.

5. Gagandeep S. Anand, Adam G. Riess, Wenlong Yuan, Rachael Beaton, Stefano Casertano, **Siyang Li**, Dmitry I. Makarov, Lidia N. Makarova, R. Brent Tully, Richard I. Anderson, Louise Breuval, Andrew Dolphin, Igor D. Karachentsev, Lucas M. Macri, Daniel Scolnic. "Tip of the Red Giant Branch Distances with *JWST*: An Absolute Calibration in NGC 4258 and First Applications to Type Ia Supernova Hosts", *The Astrophysical Journal*, 966 89 (April 26, 2024), NASA ADS: https://ui.adsabs.harvard.edu/abs/2024ApJ...966...89A/abstract.

4. Daniel Scolnic, Adam G. Riess, Jiaxi Wu, **Siyang Li**, Gagandeep S. Anand, Rachael Beaton, Stefano Casertano, Richard I. Anderson, Suhail Dhawan, Xinwei Ke. "CATS: The Hubble Constant from Standardized TRGB and Type Ia Supernova Measurements", *The Astrophysical Journal Letters*, 954 L31 (September 5, 2023), NASA ADS: https://ui.adsabs.harvard.edu/abs/2023ApJ...954L..31S/abstract.

3. Louise Breuval, Adam G. Riess, Lucas M. Macri, **Siyang Li**, Wenlong Yuan, Stefano Casertano, Tarini Konchady, Boris Trahin, Meredith J. Durbin, Benjamin F. Williams. "A 1.3% distance to M33 from HST Cepheid photometry", *The Astrophysical Journal*, 951 118 (March 31, 2023), NASA ADS: https://ui.adsabs.harvard.edu/abs/2023ApJ...951..118B/abstract.

2. Jiaxi Wu, Daniel Scolnic, Adam G. Riess, Gagandeep S. Anand, Rachael Beaton, Stefano Casertano, **Siyang Li**. "Comparative Analysis of TRGBs (CATs) from Unsupervised, Multi-Halo-Field Measurements: Contrast is Key",

The Astrophysical Journal, 954 87 (November 11, 2022), NASA ADS: https://ui.adsabs.harvard.edu/abs/2023ApJ...954...87W/abstract.

1. Albert W. K. Lau, Mehdi Shafiee, George F. Smoot, Bruce Grossan, **Siyang Li**, Zhanat Maksut. "On-sky silicon photomultiplier detector performance measurements for millisecond to sub-microsecond optical source variability studies", *Journal of Astronomical Telescopes, Instruments, and Systems*, 6(4), 046002 (November 27, 2020), NASA ADS: https://ui.adsabs.harvard.edu/abs/2020JATIS...6d6002L/abstract.

OTHER PUBLICATIONS

Book Chapter: **Siyang Li**, Rachael Beaton. "Tip of the Red Giant Branch", Invited chapter for the edited book *The Hubble Constant Tension* (Eds. Eleonora Di Valentino and Dillon Brout), Springer Singapore, 2024, DOI: 10.1007/978-981-99-0177-7_8.

CosmoVerse 2024 White Paper on Cosmic Tensions: J-region Asymptotic Giant Branch (in press). Principal Author: **Siyang Li**, Co-authors: Adam Riess, Stefano Casertano, Greg Sloan, Louise Breuval, Bartek Zgirski, Gagandeep Anand, Richard Anderson, Caroline Huang, Dan Scolnic.

CosmoVerse 2024 White Paper on Cosmic Tensions: Tip of the Red Giant Branch (in press). Principal Author: Richard I. Anderson, Co-authors: Gagandeep S. Anand, Ippocratis Saltas, Giulia de Somma, **Siyang Li**, Vladas Vansevicius, Louise Breuval, Adam Riess.

CosmoVerse 2024 White Paper on Cosmic Tensions: Cepheids (in press). Principal Author: Louise Breuval, Co-authors: Richard I. Anderson, Giulia De Somma, Luís Galbany, **Siyang Li**, Lucas Macri, Leandros Perivolaropoulos, Adam Riess, and Vladas Vansevicius.

TELESCOPE PROPOSALS

Building the Last Bridge Between the PHAT & PHATTER Surveys and Carbon Star Cosmology
PI, *Hubble Space Telescope Cycle 32 Bridge*, GO-17911, 8 orbits awarded.

Towards Standardization of the J-region Asymptotic Giant Branch: Investigating Asymmetric Luminosity Functions with Carbon Star Spectra
PI, *Apache Point Observatory Astrophysical Research Consortium 3.5-meter Telescope*, 7 half-nights awarded.

A 1% cross-calibration of Cepheids, TRGB, and JAGB in five nearby galaxies with HST
Co-I (PI: L. Breuval), *Hubble Space Telescope Cycle 31*, GO-17520, 33 orbits awarded.

INVITED TALKS

CosmoVerse Workshop@Naples, Naples, Italy. Plenary to be given between May 21 - 23, 2025.

"Crosschecking Hubble Tension Systematics with the TRGB & JAGB", *University of California, Davis Physics Department Seminar*, Davis, California, United States (January 9, 2025).

"JWST, Distance Measurements, and the JAGB & TRGB", *Yale University Cosmology Seminar*, New Haven, Conneticut, United States (November 12, 2024).

"Reconnaissance with *JWST* of the J-region Asymptotic Giant Branch in Distance Ladder Galaxies: From Irregular Luminosity Functions to Approximation of the Hubble Constant", *CosmoVerse Seminar* (May 24, 2024). Recording available at: https://youtu.be/V1P6jb4LiNE

"Reconnaissance with *JWST* of the J-region Asymptotic Giant Branch in Distance Ladder Galaxies: From Irregular Luminosity Functions to Approximation of the Hubble Constant", *Space Telescope Science Institute James Webb Space Telescope Science Conversation*, Baltimore, Maryland, United States (March 18, 2024).

"Calibrating & Standardizing the Tip of the Red Giant Branch with *Gaia* and the *Hubble Space Telescope*", *International Space Science Institute: The Stellar Path to the H_0 Tension in the Gaia, TESS, LSST and JWST Era Annual Meeting*, Bern, Switzerland (June 15, 2023).

CONTRIBUTED PRESENTATIONS

American Astronomical Society Meeting 245 Cosmology I, National Harbor, Maryland, United States. Oral presentation (Jan. 13, 2025).

Cosmo'24, Kyoto, Japan. Oral presentation (October 21, 2024).

Resolved Stellar Populations 2024 (Celebration of Peter Stetson's Career), Florence, Italy. Oral presentation (October 10, 2024).

CosmoVerse@Kraków 2024, Kraków, Poland. Oral presentation (July 9, 2024).

The 6th Neighborhood Workshop at Penn State University, State College, Pennsylvania, United States. Oral presentation (April 25, 2024).

Johns Hopkins AstroCoffee, Baltimore, Maryland, United States. Oral presentation (Feb. 5, 2024).

American Astronomical Society Meeting 243 Large Scale Structure, Cosmic Distance Scale II, New Orleans, Louisiana, United States. Oral presentation (Jan. 11, 2024).

Johns Hopkins Giant Branch Workshop, Baltimore, Maryland, United States. Oral presentation (Nov. 16, 2023).

Statistical Challenges in Modern Astronomy VIII, State College, Pennsylvania, United States. Poster presentation (June 12 - 16, 2023).

The 5th Neighborhood Workshop at Penn State University, State College, Pennsylvania, United States. Oral presentation (April 6, 2023).

American Astronomical Society Meeting 241 Cosmology II, Seattle, Washington, United States. Oral presentation (January 11, 2023).

iid2022 Workshop: Statistical Methods for Event Data, Guntersville, Alabama, United States. Oral presentation (November 15, 2022), https://sites.google.com/uah.edu/iid2022/home.

Johns Hopkins Physics and Astronomy Grad Wine & Cheese Talks, Johns Hopkins University. Oral presentation (November 4, 2022).

American Astronomical Society Meeting 240 Cosmology III, Pasadena, California, United States. Oral presentation (June 16, 2022).

Johns Hopkins Physics and Astronomy Grad Wine & Cheese Talks, Online due to COVID-19 pandemic. Oral presentation (September 15, 2021).

SPIE Astronomical Telescopes + Instrumentation; X-Ray, Optical, and Infrared Detectors for Astronomy IX (Conference 11454), Online due to COVID-19 pandemic. Poster and oral presentations (December 14-18, 2020).

University of California, Berkeley Summer Undergraduate Research Fellowship Conference, Berkeley, California, United States. Oral presentation (August 22, 2019).

SPIE Optics + Photonics; UV/Optical/IR Space Telescopes and Instruments: Innovative Technologies and Concepts IX (Conference 11115), San Diego, California, United States. Oral presentation (August 11, 2019).

8th Applied Optics and Photonics China; Space Optics, Telescopes and Instrumentation (Conference 10), Beijing, China. Poster presentation (July 8-9, 2019).

Exploring the Energetic Universe Conference, Nur-Sultan, Kazakhstan. Oral presentation (June 20, 2019).

SPIE Defense + Commercial Sensing; Infrared Technology and Applications XLV (Conference 11002), Baltimore, Maryland, United States. Poster presentation (April 16, 2019).

University of California, Berkeley Physics Department Poster Session, Berkeley, California, United States. Poster presentation (April 5, 2019).

University of California, Berkeley Physics Department Poster Session, Berkeley, California, United States. Poster presentation (April 6, 2018).

AWARDS AND FELLOWSHIPS

American Astronomical Society (AAS) Rodger Doxsey Travel Prize *2024*
One of eight recipients selected from 47 entries to receive this prize, funding travel and registration to present a dissertation talk at the Winter AAS 245 meeting.

National Science Foundation Graduate Research Fellowship *2022 - Current*
A 5-year fellowship providing three years of full graduate school funding.

University of California, Berkeley Regents' and Chancellor's Scholarship *2016 - 2020*
Granted to the top 2% of undergraduates at the University of California, Berkeley, based on academic and extracurricular achievements.

Society of Photo-Optical Instrumentation Engineers (SPIE)
Optics and Photonics Education Scholarship *2019*
Granted to, "outstanding individuals for their potential long-term contributions to optics, photonics, or related fields".

8th Applied Optics and Photonics China Best Poster Award *2019*
Recipient of the Best Poster Award at the 8th Applied Optics and Photonics China Conference.

Measurement Science Conference Scholarship *2019*
A national scholarship awarded to individuals demonstrating potential and achievements in measurement science. Recipients also receive full admission to the Measurement Science Conference in Anaheim, California (April 16-19, 2019), which was attended.

University of California, Berkeley Summer Undergraduate Research Fellowship *2019*
Granted to support student-initiated research leading to a senior thesis and/or publication.

University of California, Berkeley Academic Opportunity Fund Grant *2019*
Granted to support, "opportunities for individuals and student groups to represent and further the University of California, Berkeley's academic prestige and dedication to education".

University of California, Berkeley Regents' & Chancellor's Research Fellowship *2017, 2018*
Granted to support student-initiated research.

Hong Kong University of Science and Technology (HKUST) *June 2017, Dec. 2017,*
International Research Fellowship *Dec. 2018, June 2019*
A fellowship that fully covers airfare, ground transportation, housing, and meals for conducting research at HKUST.

University of California, Berkeley Physics Undergraduate Research Scholarship *2017 - 2020*
Granted to support student research in the Physics Department.

TEACHING ASSISTANTSHIPS

Johns Hopkins AS.171.118 Stars and the Universe: Cosmic Evolution *Spring 2021, 2022*

Johns Hopkins AS.171.102 General Physics: Physical Science Majors II *Fall 2020*

Johns Hopkins AS.173.111 General Physics Laboratory I *Fall 2020*

SERVICE

Journal Referee: *The Astrophyscial Journal Supplement Series* *2024*

OUTREACH

Johns Hopkins Physics Department Outreach Volunteer *2025*
Visited Towson High School to present physics demonstrations and talk about career opportunities in astronomy.

Johns Hopkins Physics Department Mentorship Committee Member *2024 - Current*
Coordinates the mentorship program in the Johns Hopkins Physics & Astronomy department.

Johns Hopkins Physics Department Mentor *2023 - 2024*
Academic and career mentor for an undergraduate student in the Johns Hopkins Physics & Astronomy department.

Program for Advancing the Health Sciences (PATHS) Mentor *2021-2022*
Mentor for a study habits workshop and one-on-one guidance for an Alexandria City public school student aspiring to pursue a health-related career.

Application Resources for College and Higher-Education (ARCH) Mentor and Panelist *2021*
Panelist for scholarship and essay writing, and one-on-one mentor for an underprivileged high school student applying to college.

OTHER

Selected to attend the 73rd Lindau Nobel Laureate Meeting (Physics) in Lindau, Germany (June 30 − July 5, 2024).

Siyang Li, George F. Smoot III, Thorsten Stezelberger. "Silicon Photomultiplier Telescope Camera", U.S. Provisional Patent Ser. No. 62/940,250, filed November 26, 2019.