

# YINGJIE CHENG

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## Education

**NANJING UNIVERSITY**  
B.Sc. in Astronomy

Nanjing, Jiangsu, China  
September 2015-June 2019

**UNIVERSITY OF MASSACHUSETTS, AMHERST**  
Ph.D. in Astronomy

Amherst, MA, United States  
September 2019-Present

## Research Interests

Observational astronomy, Galaxy evolution, High-redshift galaxies, Circumgalactic Medium

## Collaborations

### HST

**CLEAR:** The CANDELS Lyman- $\alpha$  Emission at Reionization survey

**UVCANDELS:** Ultraviolet Imaging of the Cosmic Assembly Near-infrared Deep Extragalactic Legacy Survey

### JWST

**CEERS:** The Cosmic Evolution Early Release Science Survey

**PRIMER:** Public Release IMaging for Extragalactic Research

**NGDEEP:** The Next Generation Deep Extragalactic Exploratory Public Survey

**CAPERS:** The CANDELS-Area Prism Epoch of Reionization Survey

## Research Experience

- **Transient Gamma-Ray in the Multi-Messenger Astronomy Era** **May 2017-February 2019**  
Undergraduate Initial Research Project instructed by Prof. Zigao Dai at Nanjing University
- **The Diffuse X-ray Emission of Circum-galactic Medium (CGM)** **October 2017-March 2018**  
Research project instructed by Prof. Jiangtao Li at University of Michigan, Ann Arbor
- **Constrain the Stellar Initial Mass Function of The Galactic Center** **May 2018-June 2019**  
Summer research internship at the University of California, Berkeley instructed by Prof. Jessica Lu
- **Statistical Properties of Magnetar Bursts and FRB 121102** **March 2019-November 2019**  
The undergraduate thesis project instructed by Prof. Fayin Wang at Nanjing University
- **X-ray Spectroscopy of the Starburst Feedback in 30 Doradus** **October 2019 – April 2021**  
The first-year research project instructed by Prof. Daniel Wang at UMass Amherst
- **Completing the Protostar Luminosity Function in Cygnus-X** **October 2020 – February 2022**  
The second-year research project instructed by Prof. Robert Gutermuth at UMass Amherst
- **Thesis Project on Studying Galaxy Evolution with JWST Data** **January 2022 - Present**

PhD thesis instructed by Prof. Mauro Giavalisco at UMass Amherst

### **School & Workshops**

- The Astronomy Summer School at Shanghai Astronomical Observatory July 2017
- The Astronomy Summer Research Internship at UC Berkeley June 2018
- The NRAO/ALMA Cycle 8 community workshop March 2021
- The ngVLA Summer Short Talk Series August 2021
- The 2023 ALMA Proposal Preparation Workshop April 2023

### **Invited & Contributed Talks**

- An iposter talk at the Astronomy Summer Intern Symposium of UC Berkeley August 2018
- A contributed talk at the Annual Meeting of the Chinese Astronomical Society October 2018
- An invited talk at UMich Astronomy Journal Club February 2021
- An iposter talk at the 240th Meeting of the American Astronomical Society June 2022
- A contributed talk at the 2022 Northeast Star and Planet Formation Meeting July 2022
- A contributed talk at the 2023 JWST CEERS Team Meeting at UT Austin May 2023
- An invited FLASH talk at NOIRLab and Steward Observatory (University of Arizona) Jan 2024
- An invited talk at the 2024 Santa Cruz Galaxy Workshop July 2024
- A contributed talk at the Yale University Tinsley Workshop Oct 2024
- An iposter talk at the 245th Meeting of the American Astronomical Society (scheduled) Jan 2025

### **Honors & Awards**

- The Chinese National Astronomical Observatories Scholarship October 2017
- Zheng Gang Elite Scholarship November 2017
- Soochow Education Scholarship December 2017
- The title of “Outstanding Students” December 2018
- The title of “Outstanding Graduates” June 2019
- FCAD 2022 Mary Dailey Irvine graduate travel grant May 2022
- The SOFIA Science Spotlight (press release on newsletters) June 2022
- FCAD 2023 Mary Dailey Irvine graduate travel grant April 2023
- FCAD Scholars Spotlight Press Release Mar 2024
- FCAD 2024 Mary Dailey Irvine graduate travel grant May 2024
- UMass Astronomy Travel Award July 2024

### **Computer Skills**

**Programming Languages:** Python, C, C++, IDL

**Software:** Source Extractor, Galfit, Prospector, FSPS, Starburst99, DS9, X2go, Photutils, PetroFit

**Data Analysis:** HST, JWST, SOFIA, Chandra, XMM-Newton, Suzaku

### **Outreach & Teaching**

- Giving public Astronomy lectures at Nanjing Shuren International School September 2019
- TAing for UMass Astron 100 Exploring the Universe (lecture + lab) February 2020
- Serving for the UMass Astronomy Outreach Committee September 2020
- Spring Equinox broadcast at the UMass Sunwheel March 2021
- Director of the FCAD summer undergraduate internship program May-July 2022
- Teaching for the UMass pre-college summer program (Modern Astronomy) July 2022

• Teaching for the UMass Eureka! Astronomy workshop for high school girls	July 2022
• TAing for UMass Computational Physics course (Python coding)	September 2022
• Serving for the UMass Astronomy colloquium committee (organizing lunch talks)	2022-2024
• Organizing Astro-ph coffee discussion for the UMass Astronomy department	2023-2025
• Teaching for the UMass pre-college summer program (Modern Astronomy)	July 2023
• Serving as the student representative for the UMass Astronomy faculty meetings	September 2023
• NCCJ DEI training sessions	November 2023
• Summer Solstice broadcast at the UMass Sunwheel	June 2024
• Teaching for the UMass pre-college summer program (Modern Astronomy)	July 2024
• TAing for UMass Astron 301 Writing about Astronomy	September 2024
• Organizing the Western Massachusetts Astronomy on Tap events	September 2024

# Publication List

## Statistics

28 total published/submitted papers. 5 first-author, 23 co-authored. First author citations: 65, total citations: 678, h-index: 14 (By 10/2024, ADS)

## First-author publications

- [1] **Y. Cheng**, M. Giavalisco, B. E. Backhaus, R. Bhatawdekar, N. J. Cleri, L. Costantin, E. Daddi, M. Dickinson, S. L. Finkelstein, M. Hirschmann, B. W. Holwerda, A. M. Koekemoer, R. A. Lucas, F. Pacucci, P. G. Perez-Gonzalez, G. Rodighiero, L. Seill'e, K. E. Whitaker, L. Y. Aaron Yung, P. Arrabal Haro, M. B. Bagley, J. S. Kartaltepe, C. Papovich, N. Pirzkal. "Unveiling the Dark Side of UV/Optical Bright Galaxies: Optically Thick Dust Absorption". Submitted to ApJ, Under review.
- [2] **Y. Cheng**, M. Giavalisco, R. C. Simons, Z. Ji, D. Stroupe, and N. J. Cleri. "Exploring the Gas-phase Metallicity Gradients of Star-forming Galaxies at Cosmic Noon". In: ApJ 964.1, 94 (Mar. 2024), p. 94. doi: [10.3847/1538-4357/ad234a](https://doi.org/10.3847/1538-4357/ad234a). arXiv: [2401.12319](https://arxiv.org/abs/2401.12319) [astro-ph.GA].
- [3] **Y. Cheng**, R. A. Gutermuth, S. Offner, M. Heyer, H. Zinnecker, S. T. Megeath, and R. Pokhrel. "Completing the protostellar luminosity function in Cygnus-X with SOFIA/FORCAST imaging". In: MNRAS 512.1 (May 2022), pp. 960–978. doi: [10.1093/mnras/stac436](https://doi.org/10.1093/mnras/stac436). arXiv: [2202.06803](https://arxiv.org/abs/2202.06803) [astro-ph.GA].
- [4] **Y. Cheng**, Q. D. Wang, and S. Lim. "X-ray spectroscopy of the starburst feedback in 30 Doradus". In: MNRAS 504.2 (June 2021), pp. 1627–1643. doi: [10.1093/mnras/stab1040](https://doi.org/10.1093/mnras/stab1040). arXiv: [2104.00063](https://arxiv.org/abs/2104.00063) [astro-ph.GA].
- [5] **Y. Cheng**, G. Q. Zhang, and F. Y. Wang. "Statistical properties of magnetar bursts and FRB 121102". In: MNRAS 491.1 (Jan. 2020), pp. 1498–1505. doi: [10.1093/mnras/stz3085](https://doi.org/10.1093/mnras/stz3085). arXiv: [1910.14201](https://arxiv.org/abs/1910.14201) [astro-ph.HE].

## Co-authored publications

- [6] L. Sun, X. Wang, H. I. Teplitz, V. Mehta, A. Alavi, M. Rafelski, R. A. Windhorst, C. Scarlata, J. P. Gardner, B. M. Smith, B. Sunnquist, L. Prichard, **Y. Cheng**, N. Grogan, N. P. Hathi, M. Hayes, A. M. Koekemoer, B. Mobasher, K. V. Nedkova, R. O'Connell, B. Robertson, S. Taamoli, L. Y. A. Yung, G. Brammer, J. Colbert, C. Conselice, E. Gawiser, Y. Guo, R. A. Jansen, Z. Ji, R. A. Lucas, M. Rutkowski, B. Siana, E. Vanzella, T. Ashcraft, M. Bagley, I. Baronchelli, G. Barro, A. Blanche, A. Broussard, T. Carleton, N. Chartab, A. Codoreanu, S. Cohen, Y. S. Dai, B. Darvish, R. Davé, L. Degroot, D. de Mello, M. Dickinson, N. Emami, H. Ferguson, L. Ferreira, K. Finkelstein, S. Finkelstein, T. Gburek, M. Giavalisco, A. Grazian, C. Gronwall, S. Hemmati, J. Howell, K. Iyer, S. Kaviraj, P. Kurczynski, I. Lazar, J. MacKenty, K. B. Mantha, A. Martin, G. Martin, T. McCabe, C. Olsen, L. Otteson, S. Ravindranath, C. Redshaw, Z. Sattari, E. Soto, B. Zabelle, and The Uvcandels Team. "The Ultraviolet Luminosity Function at  $0.6 < z < 1$  from UVCANDELS". In: ApJ 972.1, 8 (Sept. 2024), p. 8. doi: [10.3847/1538-4357/ad5540](https://doi.org/10.3847/1538-4357/ad5540). arXiv: [2311.15664](https://arxiv.org/abs/2311.15664) [astro-ph.GA].
- [7] Y. Guo, S. Jogee, E. Wise, J. Pritchett Keith, E. J. McGrath, S. L. Finkelstein, K. G. Iyer, P. Arrabal Haro, M. B. Bagley, M. Dickinson, J. S. Kartaltepe, A. M. Koekemoer, C. Papovich, N. Pirzkal, L. Y. A. Yung, B. E. Backhaus, E. F. Bell, R. Bhatawdekar, **Y. Cheng**, L. Costantin, A. de la Vega, M. Giavalisco, N. P. Hathi, B. W. Holwerda, P. Kurczynski, R. A. Lucas, B. Mobasher, P. G. Pérez-González, and F. Pacucci. "The Abundance and Properties of Barred Galaxies out to  $z \sim 4$  Using JWST CEERS Data". In: arXiv e-prints, arXiv:2409.06100 (Sept. 2024), arXiv:2409.06100. doi: [10.48550/arXiv.2409.06100](https://doi.org/10.48550/arXiv.2409.06100). arXiv: [2409.06100](https://arxiv.org/abs/2409.06100) [astro-ph.GA].
- [8] K. Chworowsky, S. L. Finkelstein, M. Boylan-Kolchin, E. J. McGrath, K. G. Iyer, C. Papovich, M. Dickinson, A. J. Taylor, L. Y. A. Yung, P. Arrabal Haro, M. B. Bagley, B. E. Backhaus, R. Bhatawdekar, **Y. Cheng**, N. J. Cleri, J. W. Cole, M. C. Cooper, L. Costantin, A. Dekel, M. Franco, S. Fujimoto, C. C. Hayward, B. W. Holwerda, M. Huertas-Company, M. Hirschmann, T. A. Hutchison, A. M. Koekemoer, R. L. Larson, Z. Li, A. S. Long, R. A. Lucas, N. Pirzkal, G. Rodighiero, R. S. Somerville, B. N. Vanderhoof, A. de la Vega, S. M. Wilkins, G. Yang, and J. A. Zavala. "Evidence for a Shallow Evolution in the Volume Densities of Massive Galaxies at  $z = 4$ –8 from CEERS". In: AJ 168.3, 113 (Sept. 2024), p. 113. doi: [10.3847/1538-3881/ad57c1](https://doi.org/10.3847/1538-3881/ad57c1). arXiv: [2311.14804](https://arxiv.org/abs/2311.14804) [astro-ph.GA].

- [9] A. J. Taylor, S. L. Finkelstein, D. D. Kocevski, J. Jeon, V. Bromm, R. O. Amorin, P. Arrabal Haro, B. E. Backhaus, M. B. Bagley, E. Bañados, R. Bhatawdekar, M. Brooks, A. Calabro, O. A. Chavez Ortiz, **Y. Cheng**, N. J. Cleri, J. W. Cole, K. Davis, M. Dickinson, C. Donnan, J. S. Dunlop, R. S. Ellis, V. Fernandez, A. Fontana, S. Fujimoto, M. Giavalisco, A. Grazian, J. Guo, N. P. Hathi, B. W. Holwerda, M. Hirschmann, K. Inayoshi, J. S. Kartaltepe, Y. Khusanova, A. M. Koekemoer, V. Kokorev, R. L. Larson, G. C. K. Leung, R. A. Lucas, D. J. McLeod, L. Napolitano, M. Onoue, F. Pacucci, C. Papovich, P. G. Pérez-González, N. Pirzkal, R. S. Somerville, J. R. Trump, S. M. Wilkins, L. Y. A. Yung, and H. Zhang. “Broad-Line AGN at  $3.5 < z < 6$ : The Black Hole Mass Function and a Connection with Little Red Dots”. In: arXiv e-prints, arXiv:2409.06772 (Sept. 2024), arXiv:2409.06772. doi: [10.48550/arXiv.2409.06772](https://doi.org/10.48550/arXiv.2409.06772). arXiv: [2409.06772](https://arxiv.org/abs/2409.06772) [astro-ph.GA].
- [10] A. Le Bail, E. Daddi, D. Elbaz, M. Dickinson, M. Giavalisco, B. Magnelli, C. Gómez-Guijarro, B. S. Kalita, A. M. Koekemoer, B. W. Holwerda, F. Bournaud, A. de la Vega, A. Calabrò, A. Dekel, **Y. Cheng**, L. Bisigello, M. Franco, L. Costantin, R. A. Lucas, P. G. Pérez-González, S. Lu, S. M. Wilkins, P. Arrabal Haro, M. B. Bagley, S. L. Finkelstein, J. S. Kartaltepe, C. Papovich, N. Pirzkal, and L. Y. A. Yung. “JWST/CEERS sheds light on dusty star-forming galaxies: Forming bulges, lopsidedness, and outside-in quenching at cosmic noon”. In: A&A 688, A53 (Aug. 2024), A53. doi: [10.1051/0004-6361/202347465](https://doi.org/10.1051/0004-6361/202347465). arXiv: [2307.07599](https://arxiv.org/abs/2307.07599) [astro-ph.GA].
- [11] N. Pirzkal, B. Rothberg, C. Papovich, L. Shen, G. C. K. Leung, M. B. Bagley, S. L. Finkelstein, B. N. Vanderhoof, J. M. Lotz, A. M. Koekemoer, N. P. Hathi, **Y. Cheng**, N. J. Cleri, N. A. Grogin, L. Y. A. Yung, M. Dickinson, H. C. Ferguson, J. P. Gardner, I. Jung, J. S. Kartaltepe, R. Ryan, R. C. Simons, S. Ravindranath, D. A. Berg, B. E. Backhaus, C. M. Casey, M. Castellano, Ó. A. Chávez Ortiz, K. Chworowsky, I. G. Cox, R. Davé, K. Davis, V. Estrada-Carpenter, A. Fontana, S. Fujimoto, M. Giavalisco, A. Grazian, T. A. Hutchison, A. E. Jaskot, L. J. Kewley, A. Kirkpatrick, D. D. Kocevski, R. L. Larson, J. Matharu, P. Natarajan, L. Pentericci, P. G. Pérez-González, G. F. Snyder, R. S. Somerville, J. R. Trump, and S. M. Wilkins. “The Next Generation Deep Extragalactic Exploratory Public Near-infrared Slitless Survey Epoch 1 (NGDEEP-NISS1): Extragalactic Star-formation and Active Galactic Nuclei at  $0.5 < z < 3.6$ ”. In: ApJ 969.2, 90 (July 2024), p. 90. doi: [10.3847/1538-4357/ad429c](https://doi.org/10.3847/1538-4357/ad429c). arXiv: [2312.09972](https://arxiv.org/abs/2312.09972) [astro-ph.GA].
- [12] S. L. Finkelstein, G. C. K. Leung, M. B. Bagley, M. Dickinson, H. C. Ferguson, C. Papovich, H. B. Akins, P. Arrabal Haro, R. Davé, A. Dekel, J. S. Kartaltepe, D. D. Kocevski, A. M. Koekemoer, N. Pirzkal, R. S. Somerville, L. Y. A. Yung, R. O. Amorin, B. E. Backhaus, P. Behroozi, L. Bisigello, V. Bromm, C. M. Casey, Ó. A. Chávez Ortiz, **Y. Cheng**, K. Chworowsky, N. J. Cleri, M. C. Cooper, K. Davis, A. de la Vega, D. Elbaz, M. Franco, A. Fontana, S. Fujimoto, M. Giavalisco, N. A. Grogin, B. W. Holwerda, M. Huertas-Company, M. Hirschmann, K. G. Iyer, S. Jogee, I. Jung, R. L. Larson, R. A. Lucas, B. Mobasher, A. M. Morales, C. V. Morley, S. Mukherjee, P. G. Pérez-González, S. Ravindranath, G. Rodighiero, M. J. Rowland, S. Tacchella, A. J. Taylor, J. R. Trump, and S. M. Wilkins. “The Complete CEERS Early Universe Galaxy Sample: A Surprisingly Slow Evolution of the Space Density of Bright Galaxies at  $z \sim 8.5$ –14.5”. In: ApJL 969.1, L2 (July 2024), p. L2. doi: [10.3847/2041-8213/ad4495](https://doi.org/10.3847/2041-8213/ad4495). arXiv: [2311.04279](https://arxiv.org/abs/2311.04279) [astro-ph.GA].
- [13] S. E. Cutler, K. E. Whitaker, J. R. Weaver, B. Wang, R. Pan, R. Bezanson, L. J. Furtak, I. Labbe, J. Leja, S. H. Price, **Y. Cheng**, M. Clausen, F. Cullen, P. Dayal, A. de Graff, M. Dickinson, J. S. Dunlop, R. Feldmann, M. Franx, M. Giavalisco, K. Glazebrook, J. E. Greene, N. A. Grogin, G. Illingworth, A. M. Koekemoer, V. Kokorev, D. Marchesini, M. V. Maseda, T. B. Miller, T. Nanayakkara, E. J. Nelson, D. J. Setton, H. Shipley, and K. A. Suess. “Two Distinct Classes of Quiescent Galaxies at Cosmic Noon Revealed by JWST PRIMER and UNCOVER”. In: ApJL 967.2, L23 (June 2024), p. L23. doi: [10.3847/2041-8213/ad464c](https://doi.org/10.3847/2041-8213/ad464c). arXiv: [2312.15012](https://arxiv.org/abs/2312.15012) [astro-ph.GA].
- [14] I. Jung, S. L. Finkelstein, P. Arrabal Haro, M. Dickinson, H. C. Ferguson, T. A. Hutchison, J. S. Kartaltepe, R. L. Larson, R. C. Simons, C. Papovich, H. Park, L. Pentericci, J. R. Trump, R. O. Amorin, B. E. Backhaus, M. B. Bagley, C. M. Casey, **Y. Cheng**, N. J. Cleri, M. C. Cooper, O. R. Cooper, J. P. Gardner, E. Gawiser, A. Grazian, N. P. Hathi, M. Hirschmann, A. M. Koekemoer, R. A. Lucas, B. Mobasher, N. Pirzkal, S. Ravindranath, A. N. Straughn, L. Y. A. Yung, and A. de la Vega. “CEERS: Diversity of Ly $\alpha$  Emitters during the Epoch of Reionization”. In: ApJ 967.1, 73 (May 2024), p. 73. doi: [10.3847/1538-4357/ad3913](https://doi.org/10.3847/1538-4357/ad3913). arXiv: [2304.05385](https://arxiv.org/abs/2304.05385) [astro-ph.GA].
- [15] M. Huertas-Company, K. G. Iyer, E. Angeloudi, M. B. Bagley, S. L. Finkelstein, J. Kartaltepe, E. J. McGrath, R. Sarmiento, J. Vega-Ferrero, P. Arrabal Haro, P. Behroozi, F. Buitrago, **Y. Cheng**, L. Costantin, A. Dekel, M. Dickinson, D. Elbaz, N. A. Grogin, N. P. Hathi, B. W. Holwerda, A. M. Koekemoer, R. A. Lucas, C. Papovich, P. G. Pérez-González, N. Pirzkal, L. -. Seillé, A. de la Vega, S. Wuyts, G. Yang, and L. Y. A. Yung. “Galaxy morphology from  $z \sim 6$  through the lens of JWST”. In: A&A 685, A48 (May 2024), A48. doi: [10.1051/0004-6361/202346800](https://doi.org/10.1051/0004-6361/202346800). arXiv: [2305.02478](https://arxiv.org/abs/2305.02478) [astro-ph.GA].

- [16] D. D. Kocevski, S. L. Finkelstein, G. Barro, A. J. Taylor, A. Calabrò, B. Laloux, J. Buchner, J. R. Trump, G. C. K. Leung, G. Yang, M. Dickinson, P. G. Pérez-González, F. Pacucci, K. Inayoshi, R. S. Somerville, E. J. McGrath, H. B. Akins, M. B. Bagley, L. Bisigello, R. A. A. Bowler, A. Carnall, C. M. Casey, **Y. Cheng**, N. J. Cleri, L. Costantin, F. Cullen, K. Davis, C. T. Donnan, J. S. Dunlop, R. S. Ellis, H. C. Ferguson, S. Fujimoto, A. Fontana, M. Giavalisco, A. Grazian, N. A. Grogin, N. P. Hathi, M. Hirschmann, M. Huertas-Company, B. W. Holwerda, G. Illingworth, S. Juneau, J. S. Kartaltepe, A. M. Koekemoer, W. Li, R. A. Lucas, D. Magee, C. Mason, D. J. McLeod, R. J. McLure, L. Napolitano, C. Papovich, N. Pirzkal, G. Rodighiero, P. Santini, S. M. Wilkins, and L. Y. A. Yung. “The Rise of Faint, Red AGN at  $z > 4$ : A Sample of Little Red Dots in the JWST Extragalactic Legacy Fields”. In: arXiv e-prints, arXiv:2404.03576 (Apr. 2024), arXiv:2404.03576. doi: [10.48550/arXiv.2404.03576](https://doi.org/10.48550/arXiv.2404.03576). arXiv: [2404.03576](https://arxiv.org/abs/2404.03576) [astro-ph.GA].
- [17] S. Lu, E. Daddi, C. Maraston, M. Dickinson, P. Arrabal Haro, R. Gobat, A. Renzini, M. Giavalisco, M. B. Bagley, A. Calabrò, **Y. Cheng**, A. de la Vega, C. D’Eugenio, D. Elbaz, S. L. Finkelstein, C. Gómez-Guijarro, Q. Gu, N. P. Hathi, M. Huertas-Company, J. S. Kartaltepe, A. M. Koekemoer, A. Le Bail, Y. Lyu, B. Magnelli, B. Mobasher, C. Papovich, N. Pirzkal, R. M. Rich, S. Tacchella, and L. Y. A. Yung. “Strong asymptotic giant branch stars’ spectral features in distant quiescent galaxies”. In: Nature Astronomy (Oct. 2024). doi: [10.1038/s41550-024-02391-9](https://doi.org/10.1038/s41550-024-02391-9). arXiv: [2403.07414](https://arxiv.org/abs/2403.07414) [astro-ph.GA].
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