XUEJIAN(JACOB) SHEN

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Center for Astrophysics, Harvard University
[last updated on November 16, 2026]

EDUCATION

California Institute of Technology Sept 2018 - June 2023
Ph.D., Physics; Advisor: Prof. Philip Hopkins
Thesis: Cosmic structure and galaxy formation in alternative dark matter

Peking University Sept 2014 - June 2018
B.S., Physics

EMPLOYMENT

ITC Fellow Jul 2026 - present
Center for Astrophysics, Harvard University

Postdoctoral Fellow Oct 2023 - Jul 2026
Kavli Institute for Astrophysics and Space Research
Massachusetts Institute of Technology

RESEARCH INTERESTS

Cosmological simulations of galaxy formation; The nature of dark matter; Formation and evolution of galaxies and supermassive black holes at high redshift
UAT Keywords: galaxy formation (595) – galaxy evolution (594) – dark matter (353)

SUMMARY OF PUBLICATIONS

Total publications: **100+**
First-author publications: **14**; and **21** I played a major role in supervision or advising
Metrics: **>3000 citations**, **>1000 first-author citations**, **h-index: 33**
(see attached publication list for details)

AWARDS & FELLOWSHIPS

Outstanding UROP Mentor Award — Massachusetts Institute of Technology, 2026
ITC Fellowship — CfA, Harvard University, 2025
Neil Gehrels Prize Fellowship (declined) — University of Maryland, 2023
KIPAC Fellowship (declined) — Stanford University, 2023
TCCAP Fellowship (declined) — University of Texas at Austin, 2023
James A. Cullen Memorial Fellowship — California Institute of Technology, 2022
Honored Graduate — Peking University, 2018
Robin Li Fellowship — Peking University, 2017
Meritorious Award — Mathematical Contest in Modeling, 2017
Weiming Scholar Fellowship — Peking University, 2015,2016
HaiLiang Fellowship — Peking University, 2016
GuangHua Fellowship — Peking University, 2015

RESEARCH GRANTS

As Principal Investigator (PI)

ITC Fellowship	$309,000	07/2026 – 07/2029
JWST-AR-Cycle3 Theory (04814)	$329,597	10/2024 – 10/2027
ACCESS PHY260337	37M core hours	10/2026 – 10/2027
OpenAI GPT for Researchers	$12,000	10/2026 – 10/2027

As Co-Investigator

JWST-GO-Cycle4 (07404, PI Naidu)	49.3 hours	10/2025 – 10/2027
SuperMUC-NG at LRZ (PI Puchwein)	33M core hours	09/2025 – 09/2027
DiRAC THESAN-MultiZoom (PI McClymont)	18.4M core hours	01/2026 – 01/2028
THESAN-CGM refinement (PI Pruto)	5.2M core hours	01/2026 – 01/2028
LUMINA/LUMINA-ALT (PI Zier)	>150M core hours	01/2025 - 01/2028

TEACHING & ADVISING

Caltech Graduate Teaching Assistant, Computational Physics Lab Ph20/21/22
Lectures, MIT Physics 8.902 (2023,2024)

Undergraduate Students:
Gabriel Aguiar (Caltech, 2021–2022), Eitan Rapaport (Caltech, 2022–2023), Evan Erickson (MIT, 2023–), Yongao Hu (MIT, 2024), Hui Wang (MIT, 2023–2024), Vinh Tran (MIT, 2023–2026), Aidan Leonard (MIT, 2023–2024), Zihao Wang (MIT/PKU, 2023–), Qiaorong Yu (Oxford, 2025), Xiaoqing Sun (MIT, 2024), Aliaksandr Melnichenka (Berea College, 2025), Hyun Song (Harvard, 2026–), Ye He (NJU, 2026–), Jiahui Xie (Caltech/Harvard, 2026–), Chuiyang Kong (Brown/Harvard, 2026–), Zihan Wang (Oxford, 2026–)
Graduate Students:
Rongrong Liu (Harvard, 2025–), Charline Shen (Harvard, 2023–2025), Darkhan Shadykul (MIT, 2026–), Vinh Tran (Caltech, 2026–)

SYNERGISTIC ACTIVITIES

Professional Services
- Journal Referee for Monthly Notices of the Royal Astronomical Society (MNRAS, since 2020), MNRAS Letters (since 2023), The Astrophysical Journal (ApJ, since 2022), ApJ Letters (since 2022), Astronomy & Astrophysics (since 2025), Scientific Reports (Since 2023), Physics Review Letters (PRL, since 2024), Physics Review D (PRD, since 2023)
- Oscii Bascii (& Grad student representative) of Theoretical AstroPhysics Including Relativity and Cosmology (TAPIR, 2019-2022), Caltech
- Local Organizing Committee (LOC) for the Galaxy Formation and Evolution in Southern California (GalFRESCA) workshop (2022)
- MIT Physics Basic Computing Services "SubMIT" Project Team Member (2023-2026)
- Organizer for MIT Physics Basic Computing Services User Meetings (2023-2026)

Outreach
- Speaker at Caltech Stargazing Lecture Series (2023)
- Organizer of Stargazing and Outreach Activities (2015-2018), Peking University

SELECTED TALKS

Invited Talks

Physics Seminar	Penn State University, 04/2026
Colloquium	Fudan University, 02/2026
Colloquium	Westlake University, 01/2026
Colloquium	Shanghai Jiaotong University, 01/2026
Job Forum	Nanjing University, 12/2025
Job Forum	Fudan University, 12/2025
Astronomy Seminar	Shanghai Jiaotong University, 12/2025
HEP Seminar	Harvard University, 11/2025
HEP Seminar	Boston University, 10/2025
DoA Seminar	Nanjing University, 09/2025
KIAA Seminar	Peking University, 09/2025
DoA Seminar	Tsinghua University, 09/2025
DREAMS Collaboration Meeting	CCA, Flatiron Institute, 05/2025
Cosmology Seminar	Yale University, 04/2025
Astronomy Seminar	CCA, Flatiron Institute, 10/2024
DoA Seminar	Zhejiang University, 09/2024
DoA Seminar	University of Texas at Austin, 08/2024
DoA Seminar	University of Cambridge, 06/2024
DoA Seminar	Tsinghua University, 09/2023
KIAA Seminar	Peking University, 09/2023
Stargazing Lecture	Caltech, 05/2023
KIPAC Tea Talk	Stanford University, 02/2023
Observational Cosmology Seminar	Caltech, 11/2021

Contributed Talks

Conference "Dynamic Cosmic Structures"	Hangzhou, 10/2026
Astronomy Seminar	Westlake University, 10/2026
Conference "Building Galaxies from Scratch"	University of Heidelberg, 09/2026
Kavli Symposium	University of Cambridge, 09/2026
Roman Science Meeting	Caltech, 07/2026
Basic Computing Service Review	MIT, 06/2026
Journal Club	MIT, 04/2026
Early Universe Conference	Tokyo, 03/2026
Aspen Winter Conference	Aspen Center for Physics, 03/2026
ITC Luncheon	Harvard CfA, 02/2026
CfA Conference	Napa Valley, 01/2026
FOLIAGE Meeting	Wesleyan University, 11/2025
THESAN Workshop	Harvard CfA, 08/2025
SIDM Workshop	Valencia, 06/2025
Cosmic Frontier Center Conference	Austin, 05/2025
Basic Computing Service Review	MIT, 05/2025
Journal Club	MIT, 03/2025
Hernquist's group talk	Harvard CfA, 03/2025
KITP Program & Conference	Kavli Institute for Theoretical Physics, 08/2024
Santa Cruz Galaxy Formation Workshop	UC Santa Cruz, 08/2024
Basic Computing Service Review	MIT, 08/2024
Journal Club	MIT, 04/2024
Conference "Building Galaxies from Scratch"	University of Vienna, 02/2024
Hernquist's group talk	Harvard CfA, 02/2024
ITC Luncheon	Harvard CfA, 10/2023
UCLA Dark Matter Meeting	UCLA, 03/2023

Dark Cosmos Seminar	Princeton University, 10/2022
Brown Bag Lunch Talk	MIT, 10/2022
Hernquist's group talk	Harvard CfA, 10/2022
FIRE Seminar	Virtual, 10/2022
GalFRESCA Workshop	Caltech, 09/2022
Vogelsberger's group talk	MIT, 08/2019
Hopkins' group talk	Caltech, 06/2019

SELECTED PRESS COVERAGE

- NASA: JWST Pushes Boundaries of Observable Universe Closer to Big Bang
- Kavli Foundation News: "Early" Dark Energy Could Explain Anomalous Galaxies and the Universe's Disjointed Expansion Rate
- University of Cambridge News: Dark energy in the early universe could solve two major problems in cosmology
- UT Austin News: Early Dark Energy Could Resolve Cosmology's Two Biggest Puzzles
- Yahoo News: How dark energy could relieve 'Hubble tension' and galaxy headaches
- Phys.org: Early dark energy could resolve cosmology's two biggest puzzles
- MirageNews: Early Dark Energy May Solve Cosmology's Top Two Mysteries
- MIT News: Early dark energy could resolve cosmology's two biggest puzzles
- CCA News: Bursts of Star Formation Explain Mysterious Brightness at Cosmic Dawn
- Space.com: Dark matter atoms may form shadowy galaxies with rapid star formation
- Northwestern News: Bursts of star formation explain mysterious brightness at cosmic dawn
- Phys.org: Dark matter can make dark atoms, say theoretical astrophysicists
- Scientific American: JWST's Glimpses of Early Galaxies Could Shed Light on Dark Matter
- Astrobites: Forecasting the obscured first few billion years

PUBLICATIONS (FIRST-AUTHOR & PEER-REVIEWED)

See my SciX bibliography for full information (ORCID **0000-0002-6196-823X**)

1. **X. Shen**, O. Zier, M. Vogelsberger, M. Boylan-Kolchin, L. Hernquist, et al. The Cosmic Rush Hour: Rapid formation of bright, massive, disky, star-forming galaxies as signatures of early-universe physics. *MNRAS*, 550(2):stag1227, August 2026

2. **X. Shen**, R. Kannan, E. Puchwein, A. Smith, M. Vogelsberger, et al. The THESAN-ZOOM project: star formation efficiencies in high-redshift galaxies. *MNRAS*, 545(4):staf2119, February 2026

3. **X. Shen**, M. Vogelsberger, M. Boylan-Kolchin, S. Tacchella, R. P. Naidu. Early galaxies and early dark energy: a unified solution to the hubble tension and puzzles of massive bright galaxies revealed by JWST. *MNRAS*, 533(4):3923–3936, October 2024

4. **X. Shen**, M. Vogelsberger, J. Borrow, Y. Hu, E. Erickson, et al. The THESAN project: galaxy sizes during the epoch of reionization. *MNRAS*, 534(2):1433–1458, October 2024

5. **X. Shen**, P. F. Hopkins, L. Necib, F. Jiang, M. Boylan-Kolchin, et al. Dissipative Dark Matter on FIRE. II. Observational Signatures and Constraints from Local Dwarf Galaxies. *ApJ*, 966(1):131, May 2024

6. **X. Shen**, H. Xiao, P. F. Hopkins, K. M. Zurek. Disruption of Dark Matter Minihalos in the Milky Way Environment: Implications for Axion Miniclusters and Early Matter Domination. *ApJ*, 962(1):9, February 2024

7. **X. Shen**, J. Borrow, M. Vogelsberger, E. Garaldi, A. Smith, et al. THESAN-HR: galaxies in the Epoch of Reionization in warm dark matter, fuzzy dark matter, and interacting dark matter. *MNRAS*, 527(2):2835–2857, January 2024

8. **X. Shen**, M. Vogelsberger, M. Boylan-Kolchin, S. Tacchella, R. Kannan. The impact of UV variability on the abundance of bright galaxies at z $\geq$ 9. *MNRAS*, 525(3):3254–3261, November 2023

9. **X. Shen**, T. Brinckmann, D. Rapetti, M. Vogelsberger, A. Mantz, et al. X-ray morphology of cluster-mass haloes in self-interacting dark matter. *MNRAS*, 516(1):1302–1319, October 2022

10. **X. Shen**, M. Vogelsberger, D. Nelson, S. Tacchella, L. Hernquist, et al. High-redshift predictions from IllustrisTNG - III. Infrared luminosity functions, obscured star formation, and dust temperature of high-redshift galaxies. *MNRAS*, 510(4):5560–5578, March 2022

11. **X. Shen**, P. F. Hopkins, L. Necib, F. Jiang, M. Boylan-Kolchin, et al. Dissipative dark matter on FIRE - I. Structural and kinematic properties of dwarf galaxies. *MNRAS*, 506(3):4421–4445, September 2021

12. **X. Shen**, M. Vogelsberger, D. Nelson, A. Pillepich, S. Tacchella, et al. High-redshift JWST predictions from IllustrisTNG: II. Galaxy line and continuum spectral indices and dust attenuation curves. *MNRAS*, 495(4):4747–4768, July 2020

13. **X. Shen**, P. F. Hopkins, C.-A. Faucher-Giguère, D. M. Alexander, G. T. Richards, et al. The bolometric quasar luminosity function at z = 0-7. *MNRAS*, 495(3):3252–3275, January 2020

PUBLICATIONS (FIRST-AUTHOR & UNDER REVIEW)

1. **X. Shen**, O. Zier, A. Smith, R. Liu, R. Kannan, et al. The Lumina Project: The Demographics of Active Galactic Nuclei from Quasars to Little Red Dots at $z \geq 3$. *arXiv e-prints*, page arXiv:2605.24112, May 2026

PUBLICATIONS (CO-AUTHORED & PEER-REVIEWED)

† indicates papers in which I played a major role in supervision or advising.

1. † O. Zier, **X. Shen**, V. Tran, M. Rosenlyst, M. Vogelsberger, et al. A novel implementation of self-interacting dark matter in AREPO. *MNRAS*, 552(1):stag1674, October 2026

2. † Z. Wang, F. Jiang, H. Zheng, **X. Shen**, Z. Jia, et al. Halo assembly bias in the early Universe: a clustering probe of the origin of the Little Red Dots. *MNRAS*, 552(1):stag1712, October 2026

3. † A. L. Schechter, A. Ćiprijanović, **X. Shen**, R. Nevin, J. M. Comerford, et al. Beyond the Brightest: A Deep Learning Approach to Identifying Major and Minor Galaxy Mergers in CANDELS at z $\sim$ 1. *ApJ*, 1006(1):107, July 2026

4. † T. Shen, **X. Shen**, H. Xiao, M. Vogelsberger, F. Jiang. Massive black holes seeded by dark matter: Implications for little red dots and gravitational wave signatures. *Phys. Rev. D*, 114(2):023048, July 2026

5. † I. S. Sands, P. F. Hopkins, **X. Shen**, M. Boylan-Kolchin, J. Bullock, et al. Confronting the Diversity Problem: The Limits of Galaxy Rotation Curves as a Tool to Understand Dark Matter Profiles. *ApJ*, 1000(1):127, March 2026

6. † V. Tran, **X. Shen**, M. Vogelsberger, D. Gilman, S. O'Neil, et al. Novel density profile for isothermal cores of dark matter halos. *Phys. Rev. D*, 113(6):063024, March 2026

7. † Z. Wang, **X. Shen**, M. Vogelsberger, H. Li, R. Kannan, et al. The THESAN-ZOOM project: star formation efficiency from giant molecular clouds to galactic scale in high-redshift starbursts. *MNRAS*, 544(3):2675–2697, December 2025

8. † Q. S. Yu, S. O'Neil, **X. Shen**, M. Vogelsberger, S. Bose, et al. Measuring the splashback feature: Dependence on halo properties and history. *The Open Journal of Astrophysics*, 8:E164, November 2025

9. † V. Tran, **X. Shen**, D. Gilman, M. Vogelsberger, S. O'Neil, et al. Core collapse in resonant self-interacting dark matter across two decades in halo mass. *Phys. Rev. D*, 112(8):083003, October 2025

10. † X. Sun, S. O'Neil, **X. Shen**, M. Vogelsberger. The effects of projection on measuring the splashback feature. *The Open Journal of Astrophysics*, 8:100, July 2025

11. † S. Roy, **X. Shen**, J. Barron, M. Lisanti, D. Curtin, et al. Aggressively Dissipative Dark Dwarfs: The Effects of Atomic Dark Matter on the Inner Densities of Isolated Dwarf Galaxies. *ApJ*, 982(2):175, April 2025

12. † A. Leonard, S. O'Neil, **X. Shen**, M. Vogelsberger, O. Rosenstein, et al. Varying primordial state fractions in exo- and endothermic SIDM simulations of Milky Way-mass haloes. *MNRAS*, 531(1):1440–1453, June 2024

13. † C. Gemmell, S. Roy, **X. Shen**, D. Curtin, M. Lisanti, et al. Dissipative Dark Substructure: The Consequences of Atomic Dark Matter on Milky Way Analog Subhalos. *ApJ*, 967(1):21, May 2024

14. † P. F. Hopkins, A. B. Gurvich, **X. Shen**, Z. Hafen, M. Y. Grudić, et al. What causes the formation of discs and end of bursty star formation? *MNRAS*, 525(2):2241–2286, October 2023

15. † S. Roy, **X. Shen**, M. Lisanti, D. Curtin, N. Murray, et al. Simulating Atomic Dark Matter in Milky Way Analogs. *ApJ*, 954(2):L40, September 2023

16. † H. Xiao, **X. Shen**, P. F. Hopkins, K. M. Zurek. SMBH seeds from dissipative dark matter. *J. Cosmol. Astropart. Phys.*, 2021(7):039, July 2021

17. † M. Vogelsberger, D. Nelson, A. Pillepich, **X. Shen**, F. Marinacci, et al. High-redshift JWST predictions from IllustrisTNG: dust modelling and galaxy luminosity functions. *MNRAS*, 492(4):5167–5201, March 2020

18. C. Roche, M. Vogelsberger, M. McDonald, I. Dutra, P. Natarajan, et al., incl. **X. Shen**. A Consistent Implementation of Cluster Strong Lensing in Cosmological Simulation Light Cones. *The Open Journal of Astrophysics*, 9:71998, October 2026

19. L. S. Mandacarú Guerra, S. O'Neil, M. Lisanti, S. Roy, R. Sanderson, et al., incl. **X. Shen**. Probing Atomic Dark Matter with Stellar Streams in Milky Way-mass Galaxies. *ApJ*, 1009(1):76, September 2026

20. Y. Wang, X. Luo, H. Wang, E. Wang, H. Li, et al., incl. **X. Shen**. A Universal Dance of Galactic Disks: Ubiquitous Precession and Its Implications. *ApJ*, 1006(2):160, August 2026

21. J. C. Rose, M. Lisanti, P. Torrey, F. V. Navarro, A. M. Garcia, et al. The DREAMS Project: Disentangling the Impact of Halo-to-halo Variance and Baryonic Feedback on Milky Way Satellite Galaxies. *ApJ*, 1006(2):244, August 2026

22. I. Leisher, P. Torrey, A. M. Garcia, J. C. Rose, F. Villaescusa-Navarro, et al., incl. **X. Shen**. Linking Warm Dark Matter to Merger Tree Histories via Deep Learning Networks. *ApJ*, 1005(2):186, July 2026

23. A. M. Garcia, J. C. Rose, P. Torrey, A. Caputo, M. Lisanti, et al. The DREAMS Project: Disentangling the Impact of Halo-to-halo Variance and Baryonic Feedback on Milky Way Dark Matter Density Profiles. *ApJ*, 1002(1):8, May 2026

24. E. Lilie, J. C. Rose, M. Lisanti, A. M. Garcia, P. Torrey, et al. The DREAMS Project: Disentangling the Impact of Halo-to-Halo Variance and Baryonic Feedback on Milky Way Dark Matter Speed Distributions. *ApJ*, 1002(2):168, May 2026

25. W. McClymont, S. Tacchella, A. Smith, R. Kannan, E. Garaldi, et al., incl. **X. Shen**. The THESAN-ZOOM project: mystery N/O more — uncovering the origin of peculiar chemical abundances and a not-so-fundamental metallicity relation at 3 ¡ z ¡ 12. *MNRAS*, 548(1):stag016, May 2026

26. A. M. Garcia, P. Torrey, A. Bhagwat, **X. Shen**, M. Vogelsberger, et al. Metallicity Gradients in Modern Cosmological Simulations. II. The Role of Bursty versus Smooth Feedback at High Redshift. *ApJ*, 1001(2):188, April 2026

27. V. Tran, D. Gilman, M. S. Delos, **X. Shen**, O. Zier, et al. Role of prompt cusps in driving the core collapse of self-interacting dark matter halos. *Phys. Rev. D*, 113(8):083030, April 2026

28. T. Nguyen, F. Villaescusa-Navarro, S. Mishra-Sharma, C. Cuesta-Lazaro, P. Torrey, et al. How DREAMS Are Made: Emulating Satellite Galaxy and Subhalo Populations with Diffusion Models and Point Clouds. *ApJ*, 997(2):336, February 2026

29. P. Acosta, J. Bendavid, M. D'Alfonso, J. Eysermans, C. Freer, et al. SubMIT: A Physics Analysis Facility at MIT. *EPJ Research Infrastructures*, 10(1):2, February 2026

30. E. Garaldi, R. Kannan, A. Smith, J. Borrow, M. Vogelsberger, et al. Correction to: The THESAN project: public data release of radiation-hydrodynamic simulations matching reionization-era JWST observations. *MNRAS*, 545(4):staf2196, February 2026

31. G. Pruto, L. Keating, R. Kannan, E. Puchwein, A. Smith, et al. The THESAN-ZOOM project: the hidden neighbours of O I absorbers during reionization. *MNRAS*, 546(2):stag064, February 2026

32. F. Jiang, Z. Jia, H. Zheng, L. C. Ho, K. Inayoshi, et al., incl. **X. Shen**. Formation of the Little Red Dots from the Core Collapse of Self-interacting Dark Matter Halos. *ApJ*,

996(1):L19, January 2026

33. W. McClymont, S. Tacchella, X. Ji, R. Kannan, R. Maiolino, et al. Overmassive black holes in the early Universe can be explained by gas-rich, dark matter-dominated galaxies. *MNRAS*, 545(1):staf2092, January 2026

34. R. P. Naidu, P. A. Oesch, G. Brammer, A. Weibel, Y. Li, et al. A Cosmic Miracle: A Remarkably Luminous Galaxy at zspec = 14.44 Confirmed with JWST. *The Open Journal of Astrophysics*, 9:56033, January 2026

35. W. McClymont, S. Tacchella, A. Smith, R. Kannan, E. Puchwein, et al. The THESAN-ZOOM project: central starbursts and inside-out quenching govern galaxy sizes in the early Universe. *MNRAS*, 544(2):1732–1747, December 2025

36. B. Costanza, B. Y. Wang, F. Villaescusa-Navarro, A. M. Garcia, J. C. Rose, et al., incl. **X. Shen**. On the Sensitivity of Different Galaxy Properties to Warm Dark Matter. *ApJ*, 994(1):62, November 2025

37. M. C. Straight, M. Boylan-Kolchin, J. S. Bullock, P. F. Hopkins, **X. Shen**, et al. Central densities of dark matter haloes in FIRE-2 simulations of low-mass galaxies with cold dark matter and self-interacting dark matter. *MNRAS*, 543(3):1995–2005, November 2025

38. T.-E. Bulichi, O. Zier, A. Smith, M. Vogelsberger, A.-C. Eilers, et al., incl. **X. Shen**. High-redshift AGN population in radiation-hydrodynamics simulations. *MNRAS*, 544(1):355–371, November 2025

39. O. Zier, R. Kannan, A. Smith, E. Puchwein, M. Vogelsberger, et al., incl. **X. Shen**. The THESAN-ZOOM project: long-term imprints of external reionization on galaxy evolution. *MNRAS*, 544(1):391–409, November 2025

40. O. Zier, R. Kannan, A. Smith, E. Puchwein, M. Vogelsberger, et al., incl. **X. Shen**. The THESAN-ZOOM project: Population III star formation continues until the end of reionization. *MNRAS*, 544(1):410–429, November 2025

41. W. McClymont, S. Tacchella, A. Smith, R. Kannan, E. Puchwein, et al. The THESAN-ZOOM project: burst, quench, repeat — unveiling the evolution of high-redshift galaxies along the star-forming main sequence. *MNRAS*, 544(1):513–534, November 2025

42. R. Kannan, E. Puchwein, A. Smith, J. Borrow, E. Garaldi, et al., incl. **X. Shen**. Introducing the THESAN-ZOOM project: radiation-hydrodynamic simulations of high-redshift galaxies with a multi-phase interstellar medium. *The Open Journal of Astrophysics*, 8:153, October 2025

43. N. Jamieson, A. Smith, M. Neyer, R. Kannan, E. Garaldi, et al., incl. **X. Shen**. The THESAN project: tracking the expansion and merger histories of ionized bubbles during the Epoch of Reionization. *MNRAS*, 541(2):1088–1105, August 2025

44. D. Narayanan, D. P. Stark, S. L. Finkelstein, P. Torrey, Q. Li, et al., incl. **X. Shen**. The Ultraviolet Slopes of Early Universe Galaxies: The Impact of Bursty Star Formation, Dust, and Nebular Continuum Emission. *ApJ*, 982(1):7, March 2025

45. R. Feldmann, M. Boylan-Kolchin, J. S. Bullock, O. Çatmabacak, C.-A. Faucher-Giguère, et al. Elevated UV luminosity density at Cosmic Dawn explained by non-evolving, weakly mass-dependent star formation efficiency. *MNRAS*, 536(1):988–1016, January 2025

46. C. Roche, M. McDonald, J. Borrow, M. Vogelsberger, **X. Shen**, et al. Brightest Cluster Galaxy Offsets in Cold Dark Matter. *The Open Journal of Astrophysics*, 7:65, August 2024

47. V. Tran, D. Gilman, M. Vogelsberger, **X. Shen**, S. O'Neil, et al. Gravothermal catastrophe in resonant self-interacting dark matter models. *Phys. Rev. D*, 110(4):043048, August 2024

48. E. Garaldi, R. Kannan, A. Smith, J. Borrow, M. Vogelsberger, et al. The THESAN project: public data release of radiation-hydrodynamic simulations matching reionization-era JWST observations. *MNRAS*, 530(4):3765–3786, June 2024

49. T. Morishita, M. Stiavelli, R.-R. Chary, M. Trenti, P. Bergamini, et al., incl. **X. Shen**. Enhanced Subkiloparsec-scale Star Formation: Results from a JWST Size Analysis of 341 Galaxies at 5 ¡ z ¡ 14. *ApJ*, 963(1):9, March 2024

50. T. K. Waters, C. Peterson, R. Emami, **X. Shen**, L. Hernquist, et al. Gas Morphology of Milky Way-like Galaxies in the TNG50 Simulation: Signals of Twisting and Stretching. *ApJ*, 961(2):193, February 2024

51. G. Sun, C.-A. Faucher-Giguère, C. C. Hayward, **X. Shen**. Seen and unseen: bursty star formation and its implications for observations of high-redshift galaxies with JWST. *MNRAS*, 526(2):2665–2672, December 2023

52. P. F. Hopkins, E. O. Nadler, M. Y. Grudić, **X. Shen**, I. Sands, et al. Novel conservative methods for adaptive force softening in collisionless and multispecies N-body simulations. *MNRAS*, 525(4):5951–5977, November 2023

53. G. Sun, C.-A. Faucher-Giguère, C. C. Hayward, **X. Shen**, A. Wetzel, et al. Bursty Star Formation Naturally Explains the Abundance of Bright Galaxies at Cosmic Dawn. *ApJ*, 955(2):L35, October 2023

54. F. Jiang, A. Benson, P. F. Hopkins, O. Slone, M. Lisanti, et al. A semi-analytic study of self-interacting dark-matter haloes with baryons. *MNRAS*, 521(3):4630–4644, May 2023

55. R. Emami, L. Hernquist, M. Vogelsberger, **X. Shen**, J. S. Speagle, et al. On the Robustness of the Velocity Anisotropy Parameter in Probing the Stellar Kinematics in Milky Way-Like Galaxies: Takeaway from TNG50 Simulation. *ApJ*, 937(1):20, September 2022

56. R. Kannan, A. Smith, E. Garaldi, **X. Shen**, M. Vogelsberger, et al. The THESAN project: predictions for multitracer line intensity mapping in the epoch of reionization. *MNRAS*, 514(3):3857–3878, August 2022

57. R. Emami, L. Hernquist, C. Alcock, S. Genel, S. Bose, et al., incl. **X. Shen**. Inferring the Morphology of Stellar Distribution in TNG50: Twisted and Twisted-stretched Shapes. *ApJ*, 918(1):7, September 2021

58. P. Mocz, A. Fialkov, M. Vogelsberger, F. Becerra, **X. Shen**, et al. Galaxy formation with BECDM - II. Cosmic filaments and first galaxies. *MNRAS*, 494(2):2027–2044, May 2020

59. Y. Wang, M. Vogelsberger, D. Xu, **X. Shen**, S. Mao, et al. Early-type galaxy density profiles from IllustrisTNG - II. Evolutionary trend of the total density profile. *MNRAS*, 490(4):5722–5738, October 2019

60. M. R. Lovell, J. Zavala, M. Vogelsberger, **X. Shen**, F.-Y. Cyr-Racine, et al. ETHOS - an effective theory of structure formation: predictions for the high-redshift Universe - abundance of galaxies and reionization. *MNRAS*, 477(3):2886–2899, July 2018

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