

Yingtian “Bill” Chen

Ph.D. candidate and Rackham Predoctoral Fellow

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Email: ybchen@umich.edu

ORCID: [0000-0002-5970-2563](https://orcid.org/0000-0002-5970-2563)

Website: yingtianchen.com

Education

- **University of Michigan Department of Astronomy** | Ann Arbor, US 2020 – 2026
Ph.D. candidate in Astronomy and Astrophysics
M.S. in Astronomy and Astrophysics
- **Peking University School of Physics** | Beijing, China 2016 – 2020
B.S. in Physics (with honours)

Experience

- **Visiting Researcher**, MIT Kavli Institute | Cambridge, US 2019

Research Interests

Star clusters · Stellar streams · Galaxy formation · Galactic Archaeology · Computational astronomy

- Probing the structure and evolution of galaxies and star clusters via stellar streams.
- Galaxy and star cluster formation in cosmological zoom-in simulations.
- Semi-analytical modeling of star cluster evolution in galactic environment.

See [the detailed description of my research](#)

Publications

See [the complete list of publications in ADS](#)

- **14** in total = **10** as first author + **1** by supervised students + **3** as contributing author
- First-author citations > 160 · h-index = 7
- Total citations > 180 · h-index = 8

Honours and Awards

- **Rackham Predoctoral Fellowship**, UM 2025
- **Rackham Conference Travel Grant** × 2, UM 2023 & 2024
- **Rackham International Student Fellowship**, UM 2021
- **Weiming Physics Scholarship**, PKU 2020
- **Outstanding Graduate** of Beijing 2020
- **First Prize + Best speaker**, Xingcheng Forum, PKU 2019
- **Huabao Funding for Undergraduate Research Program**, PKU 2018
- **National Scholarship** 2018
- **Pacemaker to Merit Student**, PKU 2018
- **Outstanding Winner + SIAM Award**, Mathematical Contest in Modeling 2018
- **Gold Medal**, Chinese Physics Olympiad 2015

Awarded Resources

- **Co-PI**, ACCESS *Maximize* AST200017, awarded allocation \approx 50,000 USD 2025 – 2026
171K SUs (\approx 10M CPU hours) @ TACC/Stampede3 + 256 TB @ TACC/Ranch
- **Co-PI**, ACCESS *Accelerate* AST200017, awarded allocation \approx 30,000 USD 2024 – 2025
116K SUs (\approx 6M CPU hours) @ TACC/Stampede3 + 100 TB @ TACC/Ranch

Press Releases

- Phys.org, *Astronomers identify dozens of stellar streams with Gaia* [[link](#)] 2025
- THU, *First direct measurements of globular cluster mass loss through stellar streams* [[link](#)] 2025

Selected Talks

- **Invited Talk**, *S5 telecon* | Remote 2025
- **Invited Talk** × 2, *DESI MWS telecon* | Remote 2024 – 2025
- **Invited Seminar**, *lunch talk*, Penn State | University Park, US 2025
- **Conference Talk + Poster**, *Gravity in the Local Group*, CMU | Pittsburgh, US 2025
- **Invited Seminar**, *KICP seminar*, UChicago | Chicago, US 2025
- **Invited Seminar**, *Nearby Universe group meeting*, CCA, Flatiron Institute | New York, US 2025
- **Invited Seminar**, American Museum of Natural History | New York, US 2025
- **Lunch Talk** × 5, *Astronomy grad lunch talk series*, UM | Ann Arbor, US 2021 – 2025
- **Poster + Flash Talk**, *DGSCS 2024*, UChicago | Chicago, US 2024
- **Invited Seminar**, PKU · THU · SHNU · SHAO · SJTU · PMO · NJU · ZJU | Beijing · Shanghai · Nanjing · Hangzhou, China 2024
- **Invited Seminar**, *Galaxy Formation seminar*, CCA, Flatiron Institute | New York, US 2024
- **Invited Talk**, UChicago | Remote 2024
- **Invited Talk**, *SMWLVS Star Clusters Working Group meeting* | Remote 2023
- **Conference Talk**, *MODEST-23*, NU | Evanston, US 2023
- **Conference Talk**, *Great Lakes Clusters and Streams*, UM | Ann Arbor, US 2023
- **Talk**, *Seminar for undergraduate students*, PKU | Beijing, China 2019
- **Talk**, *Xingcheng Forum*, PKU | Beijing, China 2019
- **Talk**, *Seminar for theoretical physics*, FDU | Shanghai, China 2019

Student Supervision

- Colin Holm-Hansen, *Generating mock catalogs of stellar streams in simulated Milky Way-like galaxies* (co-supervised with Oleg Gnedin), UM grad student Since 2024
- Brigitte Vazquez Segovia, *Modeling subhalo interactions in the GD-1 stellar stream* (co-supervised with Monica Valluri), UM grad student Since 2024

Professional Service

- **Referee of Journal Articles**, A&A · ApJ · MNRAS Since 2023
- **Conference Session Chair**, *DGSCS 2024*, UChicago | Chicago, US 2024
- **Conference LOC Chair**, *Great Lakes Clusters and Streams*, UM | Ann Arbor, US 2023
- **Organizer**, *Stellar Halos Group meeting* (weekly), UM | Ann Arbor, US Since 2024

Code Development

See [my GitHub profile](#)

- **Author**, [StarStream](#), *Automatic detection method for stellar streams* Since 2025
- **Author**, [GC_formation_model](#), *Semi-analytical model of globular cluster formation* Since 2023
- **Author**, [prj_plotter](#), *Density projection tool for simulations using quadtree* Since 2022
- **Author**, [mesh_illustris](#), *Fast toolkit to analyze Illustris data with mesh* Since 2021
- **Contributor**, [gala](#), *Python package for galactic and gravitational dynamics* Since 2024
- **Contributor**, [galax](#), *JAX-based package for galactic and gravitational dynamics* Since 2024
- **Contributor**, [galpy](#), *Python package for galactic dynamics* Since 2024
- **Contributor**, [ART](#), *Simulation code using adaptive mesh refinement* Since 2023
- **Public Software**, [fov_simulator](#), *Simulator of camera field of view for astrophotography* Since 2025

University Service

- **Organizer**, *Astronomy grad lunch talk series* (weekly) 2024 – 2026
- **Organizer**, *Build-Your-Website workshop* 2025
- **Organizer**, *Astrocoffee journal club* (bi-weekly) 2022 – 2025
- **Organizer**, *Preliminary examination preparation club* (weekly) 2022 – 2025
- **Chair**, *UM Chinese astronomers networking group* Since 2022
- **Department Bread Baker** (weekly) 2021 – 2022

Outreach

- **Public Talk**, *How scientists find black holes*, UM museum of natural history | Ann Arbor, US 2025
- **Public Seminar**, *Reductionism and holism*, Yuexia Space seminar series | Shenzhen, China 2021
- **Guest Lecturer**, *Physics Olympiad training*, Chengdu Jinjiang Jiaxiang Foreign Language Senior High School | Chengdu, China 2017
- **Online Tutorial**, *2D Ising model in Matlab and Python*, published on GitHub and Zhihu 2019
- **Online Tutorial**, *BP neural network in Matlab*, published on GitHub 2018

Teaching

- **Guest Lecturer**, *Hamiltonian Mechanics*, UM | Ann Arbor, US 2025
Galactic Dynamics Summer Workshop
- **Guest Lecturer**, *Cosmological N-body Simulations*, UM | Ann Arbor, US 2025
ASTRO 534: The Extragalactic Universe (grad-level cosmology)
- **Teaching Assistant**, UM | Ann Arbor, US 2021 & 2024
ASTRO 104: Alien Skies: A Tour Through the Universe
ASTRO 106: Aliens
ASTRO 115: Introductory Astrobiology: The Search for Life in the Universe

Skills

High performance computing · Data analysis and visualization · Machine learning · Web development

- **Programming Languages:** C/C++ · Python · Latex · MATLAB · HTML/CSS
- **Software/Packages:** ART · AREPO · GADGET · PeTar · MPI · AGAMA · multiprocessing · NumPy · Matplotlib · SciPy · scikit-learn · PyTorch · Astropy · yt · gala · galax · galpy · Bootstrap · Git
- **Languages:** Mandarin Chinese (native) · English (fluent)

References

- **Dr. Oleg Y. Gnedin** (Ph.D. advisor), Professor, UM [✉ognedin@umich.edu](mailto:ognedin@umich.edu)
- **Dr. Monica Valluri**, Research Professor, UM [✉mvalluri@umich.edu](mailto:mvalluri@umich.edu)
- **Dr. Hui Li** (李辉), Assistant Professor, THU [✉hliastro@tsinghua.edu.cn](mailto:hliastro@tsinghua.edu.cn)

Publications

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- **14** in total = **10** as first author + **1** by supervised students + **3** as contributing author
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Publications as First Author

1. **Yingtian Chen**[✉], Oleg Y. Gnedin, and Adrian M. Price-Whelan, *StarStream on Gaia: Stream discovery and mass loss rate of globular clusters*, submitted to AAS journals [arXiv:[2510.14924](#)] [ADS] [press release]. 2025
2. **Yingtian Chen**[✉], Oleg Y. Gnedin, Adrian M. Price-Whelan, and Colin Holm-Hansen, *StarStream: Automatic detection algorithm for stellar streams*, accepted by ApJ [arXiv:[2510.14929](#)] [ADS]. 2025
3. **Yingtian Chen**[✉], Hui Li[✉], and Oleg Y. Gnedin, *Stellar streams reveal the mass loss of globular clusters*, *ApJL* **980**, L18 [press release]. 2025
4. **Yingtian Chen**[✉], Monica Valluri, Oleg Y. Gnedin, and Neil Ash, *Improved particle spray algorithm for modeling globular cluster streams*, *ApJS* **276**, 32. 2025
5. **Yingtian Chen**[✉] and Oleg Y. Gnedin, *Galaxy assembly revealed by globular clusters*, *OJAp* **7**, 23. 2024
6. **Yingtian Chen**[✉] and Oleg Y. Gnedin, *Catalogue of model star clusters in the Milky Way and M31 galaxies*, *MNRAS* **527**, 3692. 2024
7. **Yingtian Chen**[✉] and Oleg Y. Gnedin, *Formation of globular clusters in dwarf galaxies of the Local Group*, *MNRAS* **522**, 5638. 2023
8. **Yingtian Chen**[✉] and Oleg Y. Gnedin, *Modeling the kinematics of globular cluster systems*, *MNRAS* **514**, 4736. 2022
9. **Yingtian Chen**, Hui Li[✉], and Mark Vogelsberger, *Effects of initial density profiles on massive star cluster formation in giant molecular clouds*, *MNRAS* **502**, 6157. 2021
10. **Yingtian Chen** and Bo-Qiang Ma[✉], *Novel pre-burst stage of gamma-ray bursts from machine learning*, *JHEAp* **32**, 78. 2021

Publications by *Supervised Students

11. *Colin Holm-Hansen[✉], **Yingtian Chen**, and Oleg Y. Gnedin, *Catalog of Mock Stellar Streams in Milky Way-like Galaxies*, submitted to OJAp [arXiv:[2510.09604](#)] [ADS]. 2025

Publications as Contributing Author

12. Brandon Sike[✉], Mateusz Ruszkowski, Oleg Y. Gnedin, **Yingtian Chen**, et al., *Resolving star cluster formation in galaxy simulations with cosmic ray feedback*, submitted to AAS journals [arXiv:[2510.06134](#)] [ADS]. 2025
13. Neil Ash[✉], Monica Valluri, **Yingtian Chen**, and Eric F. Bell, *Stellar bars form dark matter counterparts in TNG50*, *ApJ* **976**, 189. 2024
14. Sarah Pearson[✉], Ana Bonaca, **Yingtian Chen**, and Oleg Y. Gnedin, *Forecasting the population of globular cluster streams in Milky Way-type galaxies*, *ApJ* **976**, 54. 2024

Publications in Prep.

15. **Yingtian Chen**[✉], Oleg Y. Gnedin, Vadim A. Semenov, and Hui Li, *Simulating clustered star formation in the early Universe*, in prep. 2025