

YI-XIAN CHEN (陈逸贤)

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EDUCATION

Department of Astrophysical Sciences, [Princeton University](#)

Princeton

PhD in Astrophysical Sciences; Advisor: Jeremy Goodman

Sep 2021 – Expected June 2026

- **Research Interests:**

Planetary astrophysics: Planet formation and migration in protoplanetary disks; Observable signatures of planet-disk interactions; Dust evolution in protoplanetary disks; Planet atmospheres and spectra

AGN Disks: Gravitational Instability and MRI in accretion disks; Formation and evolution of Stars and Black Holes in AGN Disks; Tidally distorted and warped accretion disks; Extreme (eccentric, inclined) orbiters

Department of Physics, [Tsinghua University](#)

Beijing

Bachelor in Physics; Advisor: Douglas N. C. Lin

Sep 2017 - Jun 2021

- **Awards & Honors:**

Chi-Sun Yeh Scholarship (Highest Honor for Physics Major), 2021

[Tsinghua University Prestigious \(特等\) Scholarship](#) (Highest Honor for Undergraduates, 10 per year), 2020

Lin-bridge Scholarship (Awarded for Excellent Astrophysical Research), 2020

Nan-Xiang Jiang Scholarship (Highest Honor for Juniors), 2019

Dec. 9th Scholarship (Highest Honor for Sophomores), 2018

- **Programs:**

Member of Tsinghua University Spark project, research scholar cultivation program

University of California, Berkeley

Berkeley

Exchange Program

Aug 2019 - Dec 2019

LEADING-AUTHOR PUBLICATIONS

1. **Chen Y.X.***, Li Y.P., Li H., Lin D.N.C., [The Preservation of Super Earths and the Emergence of Gas Giants after Their Progenitor Cores Have Entered the Pebble Isolation Phase](#), ApJ, 896, 135
2. **Chen Y.X.***, Zhang X., Li Y.P., Li H., Lin D.N.C., [Retention of Long-Period Gas Giant Planets: Type II Migration Revisited](#), ApJ, 900, 44
3. Li Y.P.*, **Chen Y.X.***, Lin D.N.C., Zhang X., [Accretion of Gas Giants Constrained by the Tidal Barrier](#), ApJ, 906, 52
4. **Chen Y.X.***, Wang Z., Li Y.P., Baruteau C., Lin D.N.C., [Wide Dust Gaps in Protoplanetary Disks Induced by Eccentric Planets: A Mass-Eccentricity Degeneracy](#), ApJ, 922, 184
5. Li R.*, **Chen Y.X.**, Lin D.N.C., [Dust Accumulation near the Magnetosphere Truncation of Protoplanetary Discs around T Tauri Stars](#), MNRAS, 510, 5246
6. Li Y.P.*, **Chen Y.X.***, Lin D.N.C., Wang Z., [Spin Evolution of Stellar-mass Black Holes Embedded in AGN disks: Orbital Eccentricity Produces Retrograde Circumstellar Flows](#), ApJL, 928, 1
7. Zhou T., Deng H., **Chen Y.X.***, Lin D.N.C., [Turbulent Transport of Dust Particles in Protoplanetary Disks: The Effect of Upstream Diffusion](#), ApJ, 940, 117
8. **Chen Y.X.***, Bailey A., Stone J., Zhu Z., [Prograde and Retrograde Gas Flow around Disk-embedded Companions: Dependence on Eccentricity, Mass and Disk Properties](#), ApJL, 939, 23

9. **Chen Y.X.***, Jiang Y.F., Goodman J., Ostriker E., [*3D Radiational Hydrodynamics Simulations of Gravitational Instability in AGN Disks: The Effects of Radiation Pressure*](#), ApJ, 948, 120
10. **Chen Y.X.***, Lin D.N.C., [*Chaotic Gas Accretion by Black Holes Embedded in AGN Disks as Cause of Low-spin Signatures in Gravitational Wave Events*](#), MNRAS, 522, 319
11. Wu Y.†*, **Chen Y.X.†***, Jiang H.†*, et al., [*Distinguishing Magnetized Disc Winds from Turbulent Viscosity through Substructure Morphology in Planet-forming Discs*](#), MNRAS, 523, 2630
12. **Chen Y.X.***, Burrows A., Sur A., Arevalo R.T., [*Jupiter Atmospheric Models and Outer Boundary Conditions for Giant Planet Evolutionary Calculations*](#), ApJ, 957, 36
13. Li Y.P.*, **Chen Y.X.**, Lin D.N.C., [*3D Global Simulations of Accretion onto Gap-opening Planets: Implications for Circumplanetary Disc Structures and Accretion Rates*](#), MNRAS , 526, 5346
14. Wu Y.*, **Chen Y.X.***, Lin D.N.C., [*Chaotic Type I Migration in Turbulent Discs*](#), MNRAS Letters, 528, 127
15. Li R.*, **Chen Y.X.**, Lin D.N.C., [*Dust Accumulation near the Magnetosphere Truncation of Protoplanetary Discs around T Tauri Stars II. The Effects of Opacity and Thermal Evolution*](#), MNRAS, 529, 893
16. **Chen Y.X.***, Lin D.N.C., [*The Population of Massive Stars in AGN Disks*](#), accepted by ApJ
17. **Chen Y.X.***, Jiang Y.F., Goodman J., *Radiation Hydrodynamic Simulations of Massive Stars in AGNs: Accretion Suppressed By Thermal Feedback*, to be submitted

* indicates corresponding author, † indicates equal contribution

See list of publication on [arXiv](#)

SELECTED SCIENTIFIC TALKS

- **Stellar Object Formation and Evolution in AGN Disks** **Shanghai & Beijing**
Seminar Talk, Invited by Tsinghua University, Shanghai Observatory, TD Lee Institute etc. May 2023
- **Enhancement of Star Formation in AGN Disks by Radiation Pressure** **New York City**
Oral Presentation, 2nd Athena++ Workshop (Jimfest) May 2023
- **3D RHD Simulations of Gravitational Instability in AGN Disks** **Pasadena, California**
Oral Presentation, AAS 240 Jun 2022
- [Understanding Migration of Gas Giants](#) **Las Vegas, Nevada**
Oral Presentation, Exoplanet IV Apr 2022
- [Accretion of Gas Giants Constrained by the Tidal Barrier](#) **Tucson, Arizona (Virtual)**
Online Talk, invited by UArizona Planet Group Dec 2020
- [The Lense-Thirring Precession and Warped Accretion Disks](#) **Beijing**
Final project for Advanced General Relativity Dec 2020
- [The Preservation of Hot Super Earths and Cold Gas Giants](#) **Tucson, Arizona (Virtual)**
Online Talk, invited by UArizona Planet Group Jun 2020
- **Introduction to Planetary Astrophysics** **Beijing**
Chi-sun Yeh Academic Lectures, Tsinghua University Jun 2020

- [Formation of Close-in Planets \(sub-Neptunes/super-Earths\)](#) **Beijing**
Department of Astronomy (DoA) seminar on theoretical astrophysics, Tsinghua University Apr 2020
- [Galactic Center Microlensing](#) **Berkeley, California**
Report of research project, Moving Universe Group Meeting Dec 2019
- [Dust Diffusion in Protoplanetary Disks and Formation of super Earths](#) **Urumqi**
Report of research project, Formation and Evolution of Planetary System Conference Jul 2019
- [Linear Magneto-Rotational Instability](#) **Beijing**
DoA seminar on theoretical astrophysics, Tsinghua University Apr 2019

CONFERENCES & WORKSHOPS

- **Accretion Modified Stars in AGNs, Nanjing** June 2023
- **Center of Computational Astrophysics Athena++ Workshop, New York** May 2023
- **AGN in Santa Fe: Where are the Objects in AGN Disks?** March 2023
- **AAS 240 Meeting, Pasadena** June 2022
- **Exoplanet IV, Las Vegas** May 2022
- **IMPRS Summer School on “Planet Formation in Protoplanetary Disks”, Heidelberg (Virtual)** August 2020
- **Exoplanets III, Heidelberg (Virtual)** July 2020
- **Sagan Workshop on Extreme Precision Radial Velocity, Pasadena, California (Virtual)** July 2020
- **Formation and Evolution of Planetary System Seminar, Urumqi, Xinjiang** July 2019
- **Astrophysical Dynamics Conference, Shanghai** July 2019

PROFESSIONAL SERVICES

- Referee for MNRAS

STUDENTS ADVISED

- **Max Qiu (Grade 12, TMS School, Toronto --)** Nov 2022 - May 2023
ISEF (International Science and Engineering Fair) Project: *Enhanced Microlensing in the Galactic Center*
- **Jeff Ho (Grade 12, Winchester College, Winchester -- Columbia University)** May 2023 - Aug 2023
S. T. Yau High School Science Fair Project: *Structure of AGN Disks Across A Wide Range of Parameter Space*

ACADEMIC REFERENCES

- Douglas N. C. Lin
- Jeremy Goodman
- Eve Ostriker
- Adam Burrows
- James Stone
- Yan-Fei Jiang

SKILLS AND INTERESTS

Language Abilities:

- Chinese: Mandarin (native), Cantonese
- Japanese (N3)

- English: fluent oral speaker, representing China in international speech contests
- **Awards & Honors:**
China Daily English Speaking Competition (College Group) [National Championship](#), 2019
English Speaking Union International Public Speech Contest (IPSC) [Finalist/Third Place](#), 2019
China Daily English Speaking Competition (High School Group) *National Championship*, 2017
- Featured in official English Promotion Video for Tsinghua University: [Beyond the Pages](#)

Teaching: *The Universe* (Assistant Instructor, 2023 Spring, Princeton undergraduate course)

Programming Languages: Mathematica, Matlab, python, C++, HTML, LaTeX

Professional Software: FARGO3D, RADMC-3D, Athena++, CoolTLusty, MESA

Music and Vocal performance:

- Former Member of Tsinghua University chorus and Berkeley Chinese Acappella, performed in various concerts and competitions, Award-winning campus singer, Guest performer on Student Gala
- Selected Vocal Performances: [My Way](#), [Wandering Earth Theme](#), [Keep me by your Side \(让我留在你身边\)](#), [When we were Young](#), [葡萄成熟时](#), [This is the Moment](#), [Shall We Talk](#), [任我行](#)

Film production:

- Wrote screenplays for and produced short play *Ode to Guitar* (2018) and sci-fi film [A Wicked Letter Through Time \(2019\)](#)