

YI-XIAN CHEN (陈逸贤)

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EDUCATION

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

Princeton

PhD in Astrophysical Sciences

Sep 2021 – Expected June 2026

- **Research Interests:**

Topics in planet formation: Core-accretion theory of super-Earths and gas giants; Planet migration; Observable signatures of planet-disk interactions; Dust evolution in protoplanetary disks; Planet atmospheres

General application of accretion disk theory: Gravitational Instability and MRI in accretion disks; Evolution of Compact Objects/Massive Stars embedded in AGN disks; Tidally distorted and warped accretion disks

Department of Physics, [Tsinghua University](#)

Beijing

Bachelor in Physics

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

Member of Chi-Sun Yeh Physics class, part of Tsinghua University talent cultivation program

University of California, Berkeley

Berkeley

Semester 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, 4
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, 2
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, 1
11. Wu Y.†, **Chen Y.X.†**, Jiang H.†, Dong R., et al., *[Distinguishing Magnetized Disc Winds from Turbulent Viscosity through Substructure Morphology in Planet-forming Discs](#)*, MNRAS, 523, 2
12. **Chen Y.X.***, Burrows A., Sur A., Arevalo R.T., *Atmospheric Models for Gas Giant Evolution with Clouds and Irradiation Treatments Calibrated on Jupiter*, submitted to ApJ
13. 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*, in preparation
14. **Chen Y.X.***, Lin D.N.C., Chen X., et al., *A Swarm of Massive Stars Embedded in AGN Disks: Number Distribution and Dynamical Constraints*, in preparation

* indicates corresponding author, † indicates equal contribution

See list of publication on [arXiv](#)

SELECTED SCIENTIFIC TALKS

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| <ul style="list-style-type: none"> • Enhancement of Star Formation in AGN Disks by Radiation Pressure
<i>Oral Presentation, 2nd Athena++ Workshop (Jimfest)</i> | New York City
May 2023 |
| <ul style="list-style-type: none"> • 3D RHD Simulations of Gravitational Instability in AGN Disks
<i>Oral Presentation, AAS 240</i> | Pasadena, California
Jun 2022 |
| <ul style="list-style-type: none"> • <u>Understanding Migration of Gas Giants</u>
<i>Oral Presentation, Exoplanet IV</i> | Las Vegas, Nevada
Apr 2022 |
| <ul style="list-style-type: none"> • <u>Accretion of Gas Giants Constrained by the Tidal Barrier</u>
<i>Online Talk, invited by UArizona Planet Group</i> | Tucson, Arizona (Virtual)
Dec 2020 |
| <ul style="list-style-type: none"> • <u>The Lense-Thirring Precession and Warped Accretion Disks</u>
<i>Final project for Advanced General Relativity</i> | Beijing
Dec 2020 |
| <ul style="list-style-type: none"> • <u>The Preservation of Hot Super Earths and Cold Gas Giants</u>
<i>Online Talk, invited by UArizona Planet Group</i> | Tucson, Arizona (Virtual)
Jun 2020 |
| <ul style="list-style-type: none"> • Introduction to Planetary Astrophysics
<i>Chi-sun Yeh Academic Lectures, Tsinghua University</i> | Beijing
Jun 2020 |
| <ul style="list-style-type: none"> • <u>Formation of Close-in Planets (sub-Neptunes/super-Earths)</u>
<i>Department of Astronomy (DoA) seminar on theoretical astrophysics, Tsinghua University</i> | Beijing
Apr 2020 |
| <ul style="list-style-type: none"> • <u>Galactic Center Microlensing</u>
<i>Report of research project, Moving Universe Group Meeting</i> | Berkeley, California
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, Nanking 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

STUDENTS ADVISED

- Max Qiu (Grade 11, TMS School, Toronto) Nov 2022 - May 2023
ISEF (International Science and Engineering Fair) Project “Enhanced Microlensing in the Galactic Center”

SKILLS AND INTERESTS

Language Abilities:

- Chinese: Mandarin (native), Cantonese
- 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
- Invited to star in and dub an 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 \(2019\)](#)