

# YI-XIAN CHEN (陈逸贤)

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## EDUCATION

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

Princeton

PhD in Astrophysical Sciences, full scholarship

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:* Tidally distorted accretion disks; Gravitational Instability and MRI in accretion disks; Evolution of Compact Objects/Massive Stars embedded in AGN disks

### Department of Physics, [Tsinghua University](#)

Beijing

Bachelor in Physics

Sep 2017 - Jun 2021

- **GPA:** 3.90/4.00

- **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*

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

*Dec. 9<sup>th</sup> 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 (Fall 2019)

Aug 2019 - Dec 2019

- **GPA:** 4.00/4.00

## LEADING-AUTHOR PUBLICATIONS

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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\*](#), accepted by ApJ
10. Wu Y.†, **Chen Y.X.†**, Jiang H.†, et al., *Distinguishing Magnetized Disc Winds from Turbulent Viscosity through Substructure Morphology in Planet-forming Discs*, submitted to MNRAS
11. **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*, submitted to MNRAS
12. 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*, to be submitted

(\* indicates corresponding author, † indicates equal contribution)

## SELECTED SCIENTIFIC TALKS

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| <ul style="list-style-type: none"> <li>• <b>3D RHD Simulations of Gravitational Instability in AGN Disks</b><br/><i>Oral Presentation, AAS 240</i></li> </ul>   | <b>Pasadena, California</b><br>Jun 2022      |
| <ul style="list-style-type: none"> <li>• <a href="#"><u>Understanding Migration of Gas Giants</u></a><br/><i>Oral Presentation, Exoplanet IV</i></li> </ul>   | <b>Las Vegas, Nevada</b><br>Apr 2022         |
| <ul style="list-style-type: none"> <li>• <a href="#"><u>Accretion of Gas Giants Constrained by the Tidal Barrier</u></a><br/><i>Online Talk, invited by UArizona Planet Group</i></li> </ul>  | <b>Tucson, Arizona (Virtual)</b><br>Dec 2020 |
| <ul style="list-style-type: none"> <li>• <a href="#"><u>The Lense-Thirring Precession and Warped Accretion Disks</u></a><br/><i>Final project for Advanced General Relativity</i></li> </ul>  | <b>Beijing</b><br>Dec 2020                   |
| <ul style="list-style-type: none"> <li>• <a href="#"><u>The Preservation of Hot Super Earths and Cold Gas Giants</u></a><br/><i>Online Talk, invited by UArizona Planet Group</i></li> </ul>  | <b>Tucson, Arizona (Virtual)</b><br>Jun 2020 |
| <ul style="list-style-type: none"> <li>• <b>Introduction to Planetary Astrophysics</b><br/><i>Chi-sun Yeh Academic Lectures, Tsinghua University</i></li> </ul>   | <b>Beijing</b><br>Jun 2020                   |
| <ul style="list-style-type: none"> <li>• <a href="#"><u>Formation of Close-in Planets (sub-Neptunes/super-Earths)</u></a><br/><i>Department of Astronomy (DoA) seminar on theoretical astrophysics, Tsinghua University</i></li> </ul>        | <b>Beijing</b><br>Apr 2020                   |
| <ul style="list-style-type: none"> <li>• <a href="#"><u>Galactic Center Microlensing</u></a><br/><i>Report of research project, Moving Universe Group Meeting</i></li> </ul>  | <b>Berkeley, California</b><br>Dec 2019      |
| <ul style="list-style-type: none"> <li>• <a href="#"><u>Dust Diffusion in Protoplanetary Disks and Formation of super Earths</u></a><br/><i>Report of research project, Formation and Evolution of Planetary System Conference</i></li> </ul> | <b>Urumqi, Xinjiang</b><br>Jul 2019          |
| <ul style="list-style-type: none"> <li>• <a href="#"><u>Linear Magneto-Rotational Instability</u></a><br/><i>DoA seminar on theoretical astrophysics, Tsinghua University</i></li> </ul>  | <b>Beijing</b><br>Apr 2019                   |

## CONFERENCES & WORKSHOPS

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- CCA Athena Scientific Results Meeting May 2023
- AGN 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

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- 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

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### 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 Softwares:** FARGO3D, RADMC-3D, Athena++, TLusty, MESA

### Music and Vocal performance:

- 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](#)

### Film production:

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