YI-XIAN CHEN (陈逸贤)

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EDUCATION

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. 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 (Fall 2019) Aug 2019 - Dec 2019

- **GPA:** 4.00/4.00

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*, 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

- **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, Xinjiang**
  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

- **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

- **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 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*, *葡萄成熟時*, *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)*