ZIYAN XU

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EDUCATION

Peking University *Beijing, China*
Ph.D. in Astrophysics *2015 - 2021*

Peking University *Beijing, China*
B.S. in Astronomy, specializing in Astrophysics *2010 - 2015*

RESEARCH EXPERIENCE

Marie Skłodowska-Curie Postdoctoral Fellow 2025 – present
University of Copenhagen *Supervisor: Prof. Anders Johansen*

· *Impact of dust evolution in new planet formation paradigm (PLANDEVOL)*

Postdoctoral Researcher 2024 – 2025
University of Copenhagen *Supervisor: Prof. Anders Johansen*

· *Pebble accretion and volatile transport in convective envelopes of protoplanets*

Postdoctoral Researcher 2021 - 2024
École Normale Supérieure de Lyon *Supervisor: Prof. Guillaume Laibe*

· *Local spherical collapsing box in Athena++*
Collaborators: Prof. Guillaume Laibe, Dr. Elliot Lynch (CRAL - ENS Lyon)
· *Dust dynamics and planetesimal formation in dust rings in turbulent protoplanetary disks*
Collaborator: Prof. Xue-Ning Bai (Tsinghua University)
· *Implementation of COALA high-order dust coagulation algorithm in Athena++*
Collaborators: Dr. Maxime Lombart (National Taiwan Normal Univ.), Prof. Guillaume Laibe

Ph.D. Researcher 2015 - 2021
Peking University *Advisor: Prof. Gregory Herczeg*

· *Probing protoplanetary disk wind with absorption line spectroscopy*
· *Dust dynamics in MRI turbulent protoplanetary disks*
Collaborator: Prof. Xuening Bai (Tsinghua University)
· *Atmospheric dynamics and circulation in warm Jupiters*
Collaborator: Prof. Adam Showman (University of Arizona / Peking University)

Student Intern 2014 - 2015
University of California, Santa Barbara *Advisor: Prof. Ruth Murray-Clay*

· *The effect of MRI turbulence on pebble accretion - data analysis*

Student Researcher 2014 - 2015
Harvard-Smithsonian Center for Astrophysics *Advisor: Prof. Xuening Bai*

· *The effect of MRI turbulence on pebble accretion - simulation setup*

Visiting Observer February 2019
James Clerk Maxwell Telescope, Mauna Kea, Hawaii

· *Four observing nights.*

FELLOWSHIPS, GRANTS AND AWARDS

- Marie Skłodowska-Curie Postdoctoral Fellowship (2025 – 2027). Funding: EUR 247,553.28. Host: University of Copenhagen. *Impact of dust evolution in new planet formation paradigm (PLANDEVOL)*
- Outstanding Graduates of Ordinary Higher Education Institutions, Beijing (July 2021).
- Outstanding Graduates, Peking University (July 2021).
- Specialty Scholarship (academic award), Peking University (December 2019).
- Presidential Scholarship, Peking University (December 2018).
- National Scholarship, China (December 2017).
- Student Award for Outstanding Scientific Research, Peking University (2016 & 2017).
- May 4th Scholarship, Peking University (December 2016).

TEACHING AND SUPERVISION

- Journal Club Mentor, PhD programme, University of Copenhagen (Fall 2025 & Fall 2026).
- Master's Internship Supervisor, University of Copenhagen / ENS de Lyon (2025).
- Teaching Assistant, *Modern Astronomy* (undergraduate), Peking University (Spring & Fall 2019).
- Teaching Assistant, *Stellar Structure and Evolution* (doctoral), Peking University (Fall 2017).

ACADEMIC SERVICE AND OUTREACH

- Local organising committee member, *From Envelopes to Atmospheres* Workshop, Copenhagen (2026).
- Organiser and coordinator, minilab *How to Build a Solar System*, Copenhagen Culture Night (2026).
- Organiser, weekly Planet Formation Meeting, University of Copenhagen (2025 – present).
- Speaker, Tycho Science Day, University of Copenhagen (2024).
- Speaker and panel participant, International Day of Women and Girls in Science, Globe Diversity Programme, University of Copenhagen (2024).
- Referee, *The Astrophysical Journal* and *The Astrophysical Journal Letters* (2023 – present).
- Session moderator, ASIAA workshop (2021).
- Volunteer, China-US Universities Astronomy Collaboration Summit (2016).

PUBLICATIONS [ADS] [Google Scholar]

2026 Eriksson L. E. J., **Xu Z.**, Lim J., Yang C.-C., Huang P., & Mac Low M.-M., *Conditions for planetesimal formation via the streaming instability persist under turbulence driven by magnetorotational instability*, A&A, 714, A65

2026 Wang H. S., Johansen A., **Xu Z.**, et al., *Volatile depletion in rocky planets as a chemical fingerprint of hybrid accretion*, Nature Astronomy

2025 Cui C. et al. (including **Xu Z.**), *Dust Growth in ALMA Rings. II. Dusty Rossby Wave Instability*, ApJ, 986, 86

2024 **Xu Z.**, Lynch E. M., & Laibe, G., *Local spherical collapsing box in ATHENA++: Numerical implementation and benchmark tests*, A&A, 689, A96

2023 Fang M. et al. (including **Xu Z.**), *High-resolution [O I] line spectral mapping of TW Hya supportive of a magnetothermal wind*, Nature Astronomy, Volume 7, p. 905-912

2022 **Xu Z.** & Bai X.-N., *Turbulent Dust-trapping Rings as Efficient Sites for Planetesimal Formation*, ApJL, 937, L4

2022 Espaillat C. C. et al. (including **Xu Z.**), *The ODYSSEUS Survey. Motivation and First Results: Accretion, Ejection, and Disk Irradiation of CVSO 109*, AJ, 163, 114

2022 **Xu Z.** & Bai X.-N., *Dust Settling and Clumping in MRI-turbulent Outer Protoplanetary Disks*, ApJ, 924, 3

2021 **Xu Z.**, Herczeg G. J., et al., *Probing Protoplanetary Disk Winds with C II Absorption*, ApJ, 921, 181

2021 Lee Y.-H. et al. (including **Xu Z.**), *The JCMT Transient Survey: Four-year Summary of Monitoring the Submillimeter Variability of Protostars*, ApJ, 920, 119

2017 **Xu Z.**, Bai X.-N., & Murray-Clay R. A., *Pebble Accretion in Turbulent Protoplanetary Disks*, ApJ, 847, 52

SELECTED CONFERENCE PRESENTATIONS & SEMINARS

From Envelopes to Atmospheres, Copenhagen, Denmark October 2026

· Contributed talk, *"Pebble Accretion in Convective Envelopes: The Role of Dust Size and Aerodynamic Drag"*

Discs on the Exe: From protostellar discs to debris discs and planets, Exeter, UK July 2026

· Contributed talk, *"Runaway planetesimal formation in turbulent dust rings driven by a dust growth–concentration feedback loop"*

SPiCE 2: Simulating Physics in Celestial Ecosystems, Lyon, France March 2026

· Invited talk, *"Dust Evolution in Multiple Planet Formation Processes"*

Flatiron Workshop on Hydrodynamic and Dusty Turbulence in Protoplanetary Disks, New York, NY, USA February 2026

· Contributed talk, *"Feedback-regulated Dust Diffusion and Runaway Planetesimal Formation in Turbulent Disk Rings"*

From Galaxies to Planets: An Elemental Journey, Ringberg Castle, Germany February 2026

· Invited talk, *"Pebble Accretion and Volatile Transport in Convective Envelopes of Protoplanets"*

International Conference on Exoplanets and Planet Formation (EPF 2025), Shanghai, China December 2025

· Poster, *"Pebble Accretion and Volatile Transport in Convective Envelopes of Protoplanets"*

· Poster, *"Feedback-Regulated Dust Diffusion and Runaway Planetesimal Formation in Protoplanetary Disk Rings"*

University of Arizona, AZ April 2025

· Steward/LPL Origins Seminar Talk, *From Pebbles to Planets: Dust Dynamics in Planet Formation Processes*

Planet Formation & Migration near Inner Edge of Disks, Santa Barbara April 2025

· Joint review talk, *Modeling the Density and Thermal Structure near the Inner Rim*

Simulating Physics in Celestial Ecosystems, Sendai, Japan April 2024

· Contributed talk, *Microphysics in Star & Protoplanet Formation with Local Simulations*

Athena++ Workshop, New York, NY May 2023

· Contributed talk, *Dust Coagulation in Athena++*
· Poster, *Local Collapsing Boxes*

Protostars and Planets VII, Kyoto, Japan April 2023

· Poster, *Turbulent Dust-trapping Rings as Efficient Sites for Planetesimal Formation*

MIAPP Workshop, Garching, Germany June 2022

· Contributed talk, *Dust Dynamics and Planetesimal Formation in Ring-like Disk Substructures*

Lorentz Center Workshop, (Virtual) September 2021

· Contributed talk, *Dust Dynamics and Planetesimal Formation in Turbulent Protoplanetary Disks and Dust Rings*

National Conference of Planetary Science, Suzhou, China June 2021

· Contributed talk, *Dust Dynamics and Implications for Planetesimal Formation in Turbulent Protoplanetary Disks*

Five Years after HL Tau: a New Era in Planet Formation, (Virtual) December 2020

· Poster, *Dust Dynamics and Planetesimal Formation in MRI Turbulent Protoplanetary Disks*

5th Workshop of the Network of Ultraviolet Astronomy, (Virtual) October 2020

· Contributed talk, *Probing Protoplanetary Disk Winds with FUV Absorption Lines*

Planet Formation Workshop, Tokyo, Japan November 2019

· Contributed talk, *Dust Settling and Clumping in MRI Turbulent Protoplanetary Disks*

Great Barriers in Planet Formation, Palm Cove, Australia July 2019

· Contributed talk, *Probing Protoplanetary Disk Wind with Absorption Line Spectroscopy*
· Poster, *Dust Settling and Clumping in MRI Turbulent Protoplanetary Disks*

Formation and Evolution of Solar System and Exoplanetary Systems, Urumqi, China July 2019

· Poster, *Dust Settling and Clumping in MRI Turbulent Protoplanetary Disks*

East Asian Observatory, Hilo, Hawaii March 2019

· EAO Seminar Talk, *Absorption Lines as a Possible Probe of Protoplanetary Disk Wind*

Astrochemistry: Past, Present and Future, Caltech, CA July 2018

· Poster, *C II Absorption Lines as a Possible Probe of Disk Photoevaporative Wind*

University of New South Wales, Sydney, Australia March 2018

· Astro Seminar Talk, *Physical Processes in Protoplanetary Disks: Pebble Accretion and Disk Photoevaporation*

Exoplanets and Planet Formation, Shanghai, China December 2017

· Poster, *Pebble Accretion in Turbulent Protoplanetary Disks*

OWL Summer Program, University of California, Santa Cruz, CA July 2017

· Contributed talk, *Pebble Accretion in Turbulent Protoplanetary Disks*

Stanford University, CA July 2017

· KIPAC Tea Talk, *Pebble Accretion in Turbulent Protoplanetary Disks*

TECHNICAL SKILLS AND LANGUAGES

Astrophysical	Athena/Athena++, RADMC-3D, MITgcm, VisIt, DS9, IRAF
Programming	Python, C/C++, Fortran, MATLAB, shell, LaTeX
Language Skills	Mandarin (native), English (fluent), French (basic)