

TAILONG ZHANG

London, United Kingdom

✉ tailong.zhang@kcl.ac.uk | 🏠 tailongzhang.github.io

Personal Profile

PhD student in exoplanetary atmospheres at King's College London (supervisor: Prof. Giovanna Tinetti). Research on transmission-spectroscopy retrieval of exoplanet atmospheres in the JWST and Ariel era, focusing on minor molecular species and on atmospheric chemistry as context for planet formation. Previously MSc Planetary Science (Distinction, UCL) and Junior Support Scientist at Blue Skies Space (Twinkle and Mauve missions).

Education

King's College London

London, UK

PhD in Physics

June 2026 - Present

- Supervisor: Prof. Giovanna Tinetti, Department of Physics
- Atmospheric characterisation of exoplanets through transmission-spectroscopy retrieval

University College London

London, UK

MSc in Planetary Science

Sept 2023 - Sept 2024

- Graduated with Distinction (94% on thesis project)
- **Modules:** Physics of Exoplanets, Planetary Atmospheres, Astronomical Spectroscopy, Earth and Planetary Materials
- **Thesis:** Tracing Hot Jupiter Formation Histories with Advanced Telescopes Through Constraining Atmospheric Elements in The Presence of Clouds
- **Literature Review:** Interlinking Exoplanetary Atmospheres and Protoplanetary Discs: Insights into Giant Planet Formation

York University

Toronto, Canada

BSc Hons. in Physics & Astronomy

Sept 2018 - May 2023

- Graduated with Dean's Honour Roll
- **Modules:** Planets & Planetary Systems, Stars and Nebulae, Astronomical Techniques, Elementary Particle Physics

Publications

[1] **Zhang, T.**, Wilcock, B., Ma, S., Tinetti, G., Bradley, L., Stotesbury, I., Tessenyi, M., Tennyson, J. Atmospheric Characterisation with the Twinkle Space Telescope Following Advances from JWST Observations. arXiv:2508.10386 (2025). RASTI, under review.

Research Interests

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|------------------------------|---|
| Exoplanet Atmospheres | Transmission-spectroscopy retrieval and atmospheric characterisation in the JWST and Ariel era. |
| Planet Formation | Formation and disc chemistry as interpretive context for observed atmospheric abundances. |

Research Projects

PhD Research

London, UK

King's College London

June 2026 - Present

- Atmospheric retrieval of exoplanet transmission spectra with the TauREx framework, including nested-sampling inference and forward-model analysis.
- Planet-formation chemistry as interpretive context for observed atmospheric abundances.

Master Research Project

London, UK

UCL

Nov 2023 - Sept 2024

- Conducted research under Prof. Giovanna Tinetti, focusing on the atmospheric elements of hot Jupiter exoplanets using the TauREx framework for spectral analysis and incorporating cloud models and equilibrium chemistry.
- Integrated planet formation and migration models under protoplanetary disc conditions to derive insights into atmospheric chemical compositions.

Undergraduate Projects

Toronto, Canada

York University

Sept 2021 - Apr 2023

- Spectroscopic analysis of two late-type dwarf stars: data reduction in IRAF, extraction of linearised spectra, and radial-velocity determination.
- Multi-filter CCD photometry of the open cluster M34: noise correction, HR and colour-colour diagrams, and cluster age estimation.
- Ground-based transit observation of an exoplanet with differential photometry and light-curve analysis.

Conferences & Meetings

- Talk at London Exoplanet Day, London (May 2026)
- Two posters at Ariel Open Conference, Harwell (Mar 17–Mar 19, 2026)
- Two posters at International Conference on Exoplanets and Planet Formation, Shanghai (Dec 8–Dec 12, 2025)
- Talk at Earth 2.0 Conference, Shanghai (Aug 11–Aug 15, 2025)
- Poster at Spectroscopy of Exoplanets Conference, Broxbourne (Jun 26–Jun 29, 2025) – *Best Poster Prize*
- Talk at London Exoplanet Meeting, London (Sep 4, 2024)

Work Experience

Blue Skies Space Ltd.

London, UK

Junior Support Scientist

Nov 2024 – May 2026

- Conducted performance simulations for the Twinkle and Mauve space missions, developing Python-based tools to evaluate and showcase satellite capabilities.
- Contributed to launch preparation activities, including the curation of target catalogues and optimisation of observational strategies.
- Collaborated with international partners and multidisciplinary teams to integrate feedback, refine mission design, and maximise scientific return.

Technical Skills

Python	Advanced use for data analysis, atmospheric modelling, and space instrument performance simulations.
Atmospheric Retrieval	TauREx framework; Bayesian inference and nested sampling.
AI Tooling	Agentic coding frameworks (Claude Code, Codex); building custom AI research workflows.
Other Tools	Linux (Bash/Zsh), Git, L ^A T _E X, MATLAB.

Achievements

2025	Best Poster Prize, Spectroscopy of Exoplanets Conference	Broxbourne, UK
2022	Dean’s Honour Roll, York University	Canada
2021	Continuing Student Scholarship, York University	Canada

Languages

English	Professional proficiency
Mandarin	Native proficiency

Outreach

CSED Hackathon 2024 Corrected noisy transiting light curves of extrasolar planets using machine-learning techniques.