Jingxuan Yang

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Education

University of Oxford - PhD Physics 2020 – 2025
- Identified the composition of exoplanet atmospheres using sparse space telescope data
- Performed high-dimensional Bayesian inference on noisy spectra using computer clusters
- Published a NASA-listed open-source Python package used by multiple research teams

University College London - MSc Planetary Science 2019 – 2020
- Grade: Distinction
- Designed cloud models for the European Space Agency's Ariel mission using Python and Fortran

University of Cambridge - MSci Natural Sciences (Astrophysics) 2015 – 2019
- Grade: First Class
- Applied N-body simulations to study impact-driven atmospheric evolution on exoplanets
- Recipient of the Rowley Mainhood Prize for outstanding academic performance

Experience

University of Oxford - Tutor & Lab Demonstrator 2021 – 2024
- Taught Mathematical Methods, Atmospheric Physics and Statistics tutorials to undergraduates
- Supervised undergraduate students for the Atmospheric Physics Lab practicals

Menlo Security - Software Engineer Intern (UK Office, Two Summers) 2020 – 2021
- Developed asynchronous Python APIs to integrate third-party content inspection
- Improved inter-process communication with FIFO pipes

Projects

NEMESISPY: A Python Package for Exoplanets GitHub
- Developed a software to analyse spectra of exoplanet atmospheres
- Implemented a just-in-time compiler to accelerate Python execution, achieving 100× runtime speed-up
- Listed on the NASA Exoplanet Modeling and Analysis Center (EMAC)
- Used by the astrophysics community to study the composition of three exoplanets

Characterising the hot Jupiter WASP-43b Thesis
- Led an international collaboration to study the composition of the exoplanet WASP-43b
- Analysed data from the Hubble Space Telescope and the James Webb Space Telescope
- Revealed that WASP-43b has a surprisingly high-metallicity and carbon-to-oxygen ratio atmosphere
- Concluded that WASP-43b likely formed in a metal-rich environment with enhanced carbon content

First Author Publications

- "NEMESISPY: A Python package for simulating and retrieving exoplanetary spectra", JOSS, 2024
- "Simultaneous retrieval of orbital phase resolved JWST/MIRI emission spectra of the hot Jupiter WASP-43b: evidence of water, ammonia, and carbon monoxide", MNRAS, 2024
- "Testing 2D temperature models in Bayesian retrievals of atmospheric properties from hot Jupiter phase curves", MNRAS, 2023