Songnan QI

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Research interests

Early massive galaxy formation | Molecular gas in high-z galaxies | Cosmic reionization | Multi-wavelength spectroscopic analysis | Star formation histories

Education

M.Sc., Astrophysics, University of Geneva (GPA: 5.75/6.0) 2024 - present
B.Sc., Physics, University of Geneva (GPA: 5.35/6.0) 2020 - 2024
B.Sc., Economics, Renmin University of China (GPA: 3.72/4.0) 2015 - 2019

Master's Thesis

Studying the Efficient Formation of the Most Massive Galaxies in the Early Universe with JWST and ALMA (09.2025 - present)
Under the supervision of Dr. Mengyuan Xiao, Dr. Miroslava Dessauges and Prof. Pascal Oesch
Abstract:
This project aims at studying the rapid assembly of massive galaxies in the early Universe (z > 3) through multi-wavelength analysis of JWST spectroscopy and ALMA FIR observations. By deriving physical properties (stellar masses, gas and dust content, SFRs and gas depletion timescales), I will investigate star formation efficiency and quenching mechanisms across different types of massive galaxies, including dust-obscured, normal star-forming, and quiescent systems.

Research Projects

Searching for broad-line emitting galaxies with JWST FRESCO data 02.2025 - 06.2025
Under the supervision of Ph.D. candidate Alba Covelo Paz and Prof. Pascal Oesch
Evection resonance in the hierarchical restricted 3-body problem 09.2024 - 12.2024
Under the supervision of Dr. Jérémy Couturier and Prof. Adrien Leleu
MCMC algorithm application: Estimating the mass of exoplanets 10.2024 - 12.2024
As part of the course 'Astrophysics & Data Science'
Neural Network from scratch 10.2024 - 12.2024
As part of the course 'Astrophysics & Data Science'
Population synthesis of wind-fed BH-HMXBs 11.2023 - 03.2024
Under the supervision of Dr. Zepei Xing and Prof. Marc Audard

Awarded Telescope Time

As co-I: NOEMA W25DM (61.2 hrs) 2025
"Molecular gas and dust in the most massive galaxies at z_{spec}=3–6"

Selected Honors & Awards

Excellent Graduate, Beijing, China 2019
Academic Excellence Scholarship, Renmin University of China 2018, 2017, 2016
Merit Student, Renmin University of China 2018, 2017, 2016
Outstanding Student Cadre, Renmin University of China 2017, 2016

Professional & Outreach Experience

VR Exhibit Facilitator, International exhibition of Inventions of Geneva 04.2025
Junior project leader, Swissnex China (Shanghai) 07.2018 - 09.2018
Intern, Confucius Institute in Montpellier 01.2018 - 06.2018

Language Proficiency

Chinese	Native
English	Advanced (certified C1 level, maintained through English-taught Master's program)
French	Advanced (DALF C1)
German	Beginner (A1)

Technical Skills

Programming	Python
Astronomical data analysis	Interferometric imaging: `CASA`, `CARTA`
	SED fitting: `CIGALE`
	Grism analysis: `GRIZLI`
	Stellar evolution modeling: `MESA`, `POSYDON`
	N-body simulations: `NcorpiON`
Scientific tools	LaTeX, Overleaf, VS Code, Jupyter, GitHub, Topcat, DS9

Non-Academic Interests

Sports (equitation, badminton, swimming, climbing) | Reading (novels, existential philosophy) | Photography