Mengyuan XIAO

Postdoctoral Researcher

Université de Genève
Chemin Pegasi 51, 1290 *Versoix, Switzerland*
+41 22 379 22 34
mengyuan.xiao@unige.ch
mengyuanxiao.com
0000-0003-1207-5344

Research Profile

I am an observational astrophysicist specializing in the formation and evolution of massive galaxies in the early Universe, with expertise in spectroscopy and multi-wavelength data from JWST, ALMA, and NOEMA. My research has led to seven first-author papers, including major discoveries of the accelerated build-up of massive galaxies at $z = 5 - 9$ (*Nature* 2024) and the most distant spiral galaxy candidate, Zhúlóng, at $z \sim 5.2$ (*A&A* 2025). I have demonstrated independence through eight awarded PI programs (~200 hrs on JWST/ALMA/NOEMA), leading the ISSI International Team on Little Red Dots (2025-2027), and supervision of Master's students. My contributions have been recognized by the 2025 Swiss L'Oréal-UNESCO For Women in Science Award.

Selected achievements (highlights):

- First-author *Nature* (2024) and *A&A* (2025) papers with international press coverage.
- PI of 8 awarded JWST/ALMA/NOEMA programs (~200 hrs); Co-I on 30+ additional programs.
- Leadership: design of ALMA Large Program, lead ISSI International Team on Little Red Dots (2025-2027), EAS session organization, and coordination of seminars and journal clubs.

Professional Experience

Postdoctoral Fellow, Geneva Observatory, University of Geneva, Switzerland — 2023-Present
CSC Fellow, CEA Saclay, France — 2019-2022
Visiting Researcher, National Astronomical Observatory of Japan, Japan — Feb.-May 2019
Visiting Researcher, National Astronomical Observatory of Japan, Japan — Aug.-Oct. 2017

Education

Ph.D. Astronomy — 2018-2022

Nanjing University (Advisors: Dr. David Elbaz & Prof. Qiusheng Gu).
Thesis awarded "Excellent Doctoral Thesis" by Nanjing University and Jiangsu Province.

CSC Fellowship for Joint PhD, CEA Saclay, France (Advisor: Dr. David Elbaz). — 2019-2022

M.Sc. Astrophysics — 2014-2018

School of Astronomy & Space Science, Nanjing University (Advisor: Prof. Q. Gu).
Thesis awarded "Excellent Master's Thesis" by Nanjing University and Jiangsu Province.

B.Sc. Science — 2009-2013

Science of Chinese Materia Medica, Nanjing University of Traditional Chinese Medicine.

Honors and Awards

2025 Inaugural Swiss L'Oréal-UNESCO For Women in Science Award (CHF 25,000)

2024 "Excellent Doctoral Thesis" Award, Jiangsu Province and Nanjing University (two independent prizes).

2023 MERAC Awards by Swiss Society for Astrophysics and Astronomy (SSAA) (CHF 4,500)

2022 Nanjing University Cao Erjie Scholarship (~€600)

2021 Nanjing University Excellent Postgraduate.

2019 China Scholarship Council (CSC) Fellowship for joint Ph.D. (~€34,000)

2019 Provincial Excellent Master's Thesis.

2018 Nanjing University Yingcai Scholarship for Graduate Student (~€400)

2017 "Excellent Master Thesis" Award, Jiangsu Province and Nanjing University (two independent prizes).

2017 Excellent Postgraduate in the Jiangsu Province.

2016 Nanjing University Excellent Postgraduate.

2016 National Scholarship (the most prestigious scholarship in China (~€2,500)

2015 Nanjing University Excellent Postgraduate Cadre.

2015 President of Postgraduate Student Union in School of Astronomy & Space Science.

2013 Nanjing University of Traditional Chinese Medicine People's Scholarship (~€600)

2012 Nanjing University of Traditional Chinese Medicine People's Scholarship (~€600)

Community Leadership, Service, and Outreach

- Team leader, Workshop 'ISSI international Team on Little Red Dots' (2025-2027)
- Reviewer, French National Research Agency (ANR) (2025)
- Referee, APJ (since 2025); APJL (since 2025); A&A (since 2023)
- Scientific Organizer, European Astronomical Society (EAS) SS9 session (2024)
- Session Chair, 3 international conferences/workshops (2024-2025)
- Organizer of weekly Journal Club at Geneva Observatory (since 2025)
- Organizer of multiple seminar talks and academic visits at Geneva Observatory (since 2024)
- Press releases, 2024 Nature and 2025 A&A first-author papers
- Invited outreach talk at high school in Suzhou, China (planned 2026)
- Outreach, Introducing the JWST during Geneva Observatory's 250th Anniversary (2023)
- Member of the EAS and of the SSAA (Swiss Society of Astrophysics and Astronomy) (since 2023)
- LOC, the Star Formation and SMBH accretion across the Universe, Nanjing, China (2016)
- LOC, the 2nd China MaNGA workshop, Nanjing, China (2015)
- President, Postgraduate Student Union, Nanjing University (2015)

Teaching and Supervision

- Teaching: "Galaxies and Cosmology I & II", Master's course at University of Geneva (2024-present)
- Supervising 4 Master's students (3 female) since 2024, including one current student (2025-2026) whose thesis aligns with my JWST/ALMA research. One thesis has already resulted in a forthcoming paper.
- Teaching assistant for Extragalactic Astrophysics, Nanjing University (2016-2017)

Scientific Collaborations (Active Roles)

- **ISSI-LRDs (2025-2027)**: leading the ISSI (International Space Science Institute) international Team on Little Red Dots (LRDs). Two workshops in Bern and Beijing.
- **JWST FRESCO**: Core member; lead of the massive galaxies project; multiple high-impact publications including a *Nature* first-author paper; extensive international press coverage and invited talks.
- **JWST PANORAMIC**: Pure-parallel wide-area NIRCam imaging; led the discovery of a $z \sim 5.2$ grand-design spiral galaxy; resulting in a first-author *A&A* paper and broad press release coverage.
- **GOODS-ALMA**: ALMA 1.1 mm survey of the GOODS-South field; led data reduction and analysis, resulting in multiple *A&A* papers.
- **NOEMA NICE**: Tracing (proto-)cluster evolution at $1.5 < z < 4$; contributed to several *A&A* publications as co-author.
- **ALMA PHOENIX & other programs**: Recently approved ALMA Large Program (Cycle 12, 2025), where I serve as a core member; additional active involvement across ALMA/NOEMA/JWST PI and Co-I programs on massive galaxies and dust-obscured phases.

Technical Skills

- Languages: Chinese (native), English (fluent/professional), French (A1)
- Programming: Python (expert), IDL, Bash (basic)
- Data Analysis: Interferometric data reduction and analysis (e.g., ALMA, NOEMA), spectral analysis, SED modeling, kinematics analysis, galaxy morphological analysis, Monte-Carlo simulations, stacking
- Astronomical Software: CASA, GILDAS, Bagpipes, CIGALE, eazy, FAST++, SExtractor, Galfit, PySeric
- Tools: LaTeX, Overleaf, Topcat, DS9, Astropy, Jupyter, GitHub

On-site Observing Experience

2020 IRAM 30m telescope, on-site observing, 7 nights, Pico Veleta, Spain

2017 CAHA 3.5m telescope, on-site observing, 3 nights, Calar Alto, Spain

2014 2.16m telescope, on-site observing, 1 night, Xinglong, China

Selected Conferences & Invited Talks

Summary: Over 33 talks at major international conferences and seminars across Europe, Asia, and the US, including 13 invited talks since 2023.

- Invited Keynote Speaker, workshop 'Star Forming Galaxies in the Reionization Epoch: ALMA-Driven Studies with the Aid of JWST', Okinawa, Japan, Mar, 2026
- Invited Talk, Conference 'The Growth of Galaxies in the Early Universe -XI', Sesto, Italy, Jan, 2026
- Seminar Talk, Title 'Studying the Most Massive Galaxies in the Early Universe', DAWN, Denmark, Aug, 2025
- Talk, Conference 'IAU Symposium – Massive Galaxies across the Universe, Naples, Italy, June, 2025
- Invited Talk, Meeting 'Miracles of the Early Universe Meeting', Geneva, Switzerland, June, 2025
- Invited Talk, Workshop 'RUBIES & Friends meeting 2025', Bergen, Netherlands, May, 2025
- Invited Talk, Workshop 'Big Galaxies, Big Problems', Lorentz Center, Netherlands, April, 2025
- Invited Talk, Workshop ' ISSI international Team on dark galaxies', Bern, Switzerland, Feb, 2025
- Talk, Conference 'The 40th IAP Symposium: Unveiling the physics of early galaxy and black hole formation with JWST', Paris, France, Dec, 2024
- Talk, Conference 'Beyond the Edge of the Universe', Sintra, Portugal, Oct, 2024
- Talk, Conference 'Observing and Simulating Galaxy Evolution in the Era of JWST', Ascona, Switzerland, Aug, 2024
- Talk, EAS Annual Meeting, Symposium 'New light on Galaxies from Cosmic Dawn to Noon', Padova, Italy, July, 2024
- Talk, EAS Special Session 'Removing the Disguise: SMGs in the era of JWST', Padova, Italy, July, 2024
- Invited Talk, Conference 'Cosmic Odysseys 2024: The Interstellar Medium of Galaxies and AGN since Cosmic Dawn', Crete, Greece, July, 2024
- Talk, Conference 'Extreme galaxies in their extreme environments at extremely early epochs', Reykjavík, Iceland, April, 2024
- Invited Talk, Conference 'The Growth of Galaxies in the Early Universe -IX', Sesto, Italy, Jan, 2024
- Seminar Talk, Title 'A new era of studying extremely dust-obscured massive galaxies in the early Universe with JWST and ALMA', NAOJ, Japan, Nov, 2023
- Talk, Conference 'Resolving the Extragalactic Universe with ALMA & JWST', Tokyo, Japan, Nov, 2023
- Seminar Talk, Title 'FRESCO: A new era of studying extremely dust-obscured massive galaxies in the early Universe with JWST spectroscopy', DAWN, Denmark, Aug, 2023

Selected Approved Telescope Programs

Summary: PI of 8 successful observing programs on JWST, ALMA, NOEMA (~200 hrs); Co-I on 30+ additional awarded proposals across JWST, ALMA, NOEMA, VLA, VLT, and other facilities.

2025 IRAM NOEMA Interferometer (ID: W25DV, Grade A, Time awarded: 29.0 hrs) PI
Study cold molecular gas in the most distant massive spiral at z=5.05

2025 IRAM NOEMA Interferometer (ID: W25DM, Time awarded: 61.2 hrs) PI
Molecular gas and dust in the most massive galaxies at $z_{spec} = 3 - 6$

2024 IRAM NOEMA Interferometer (ID: W24EP, Time awarded: 18.0 hrs) PI
Studying the efficient formation of three monsters in $z_{spec} \sim 6.7$ overdensity

2024 ALMA (ID: 2024.1.01744.S, Time awarded: 38.5 hrs) PI
ALMA+JWST: studying the efficient formation of massive galaxies at $z_{spec} = 3 - 5$

2023 JWST (ID: Cycle3 GO-5572, Time awarded: 16.8 hrs) PI
Red Monsters: Kinematics of Two 'Universe Breaking', Ultra-Massive Galaxies in the First Gyr

2023 ALMA (ID: 2023.1.00837.S, Grade A, Time awarded: 1.0 hrs) PI
Hidden in plain sight: dynamical mass estimates for a newly-discovered red monster at $z_{spec} \sim 5.6$ in the GOODS-S field

2023 IRAM NOEMA Interferometer (ID: S23CY, Grade A, Time awarded: 12.0 hrs) PI
Revealing the interstellar medium of two extremely massive galaxies at $z_{spec} > 7$

2019 IRAM 30m (ID: 204-19, Time awarded: 19.45 hrs) PI
Probing Molecular Gas in Extremely Compact Starbursts as Major Merger Remnants

2025 ALMA Large Program (ID: 2025.1.01606.L, Time awarded: 113.5 hrs) Co-I
PHOENIX: the Emergence of Dust, Obscured Star Formation and ISM Physics at Cosmic Dawn (PI: S. Schouws)

2025 NOEMA DDT (ID: E24AI, Time awarded: 24.5 hrs) Co-I
Confirming a massive JWST-dark galaxy at $z = 6.635$ (PI: L. Bing)

2024 JWST (ID: Cycle 4 GO-7208) Co-I
THRIFTY: The High-RedshIft FronTier surveY (PI: R. Meyer)

2024 JWST (ID: Cycle 4 GO-7583, Time awarded: 7.2 hrs) Co-I
Unique H-alpha imaging of a $z = 3.95$ starbursting protocluster (PI: S. Jin)

2024 JWST (ID: Cycle 4 GO-7511, Time awarded: 19.1 hrs) Co-I
Sleeping Beauties: On the Search for Dormant Galaxies in the First Gyr (PI: A. Covelo-Paz)

2023 JWST (ID: Cycle 3 GO-5664, Time awarded: 44.8 hrs) Co-I
Dissecting Little Red Dots: the connection between early SMBH growth and cosmic reionization (PI: J. Matthee)

2023 VLA (ID: 23B-125, GradeA, Time awarded: 29.3 hrs) Co-I
A systematic CO(1-0) survey of z=2.5-4 protocluster cores (PI: L. Zhou)

2022 VLT KMOS (ID: 110.23UN, Time awarded: 12 hrs) Co-I
Instantaneous star formation rate to uncover the role of compact star formation in galaxy evolution (PI: C. Gómez-Guijarro)

Selected Publications

12 primary author papers (7 first-author papers and 5 additional primary author publications), 422 citations (current as of 28-Oct-2025), h-index 9, ADS library
50 total papers, 2052 citations (current as of 7-Nov-2025), h-index 23, ADS library

First Author Papers

2025 *No [CII] or dust detection in two Little Red Dots at zspec > 7*

Xiao, M.-Y., Oesch, P.A., L., Bing, Elbaz, D., et al., A&A, 700, A231

2025 *PANORAMIC: Discovery of an Ultra-Massive Grand-Design Spiral Galaxy at $z \sim 5.2$*

Xiao, M.-Y., Williams, C. C., Oesch, P. A., Elbaz, D., and the JWST PANORAMIC team, A&A, 696, A156

Selected press release and news: press release, Ciel&Espace (pp. 78-81), Wikipedia, NOIRLab press release, SCI News, SPACE, PHYS ORG, NASA Space News, SpaceToday

2024 *Accelerated Formation of Ultra-Massive Galaxies in the First Billion Years*

Xiao, M.-Y., Oesch, P.A., Elbaz, D., L., Bing, and the JWST FRESCO team, Nature, 635, 311

Selected press release and news: press release, THE TIMES, Ciel&Espace, lemanbleu TV, CEA press release, LiveScience, UCSC News, SCI News, Yale News, AZO Quantum

2023 *The hidden side of cosmic star formation at $z > 3$: Bridging optically-dark and Lyman break galaxies with GOODS-ALMA*

Xiao, M.-Y., Elbaz, D., Gómez-Guijarro, C., Leroy, and the GOODS-ALMA team, A&A, 672, A18

2022 *Starbursts with suppressed velocity dispersion revealed in a forming cluster at $z = 2.51$*

Xiao, M.-Y., Wang, T., Elbaz, D., Iono, D., et al. 2022, A&A, 664, A63

2018 *The Physical Characteristics of Interstellar Medium in NGC3665 with Herschel Observation*

Xiao, M.-Y., Zhao, Y.-H., Gu, Q.-S., & Shi, Y. 2018, ApJ, 854, 111

2016 *The Nuclear Activities of Nearby S0 Galaxies*

Xiao, M.-Y., Gu, Q.-S., Chen, Y.-M., & Zhou, L. 2016, ApJ, 831, 63

Primary Author Papers

2025 *Overdense fireworks in GOODS-N: Unveiling a record number of massive dusty star forming galaxies at $z \sim 5.2$ with the N2CLS*

Lagache, G., **Xiao, M.-Y.**, Beelen, A., Berta, S., Ciesla, L. , et al., A&A submitted, arXiv:2506.15322

Contribution: Second author; analyzed complementary JWST imaging/spectroscopy, generated figures and validation plots, and wrote portions of the Results/Methods; contributed to interpretation through frequent discussions with the lead author.

2025 *From Starburst to Quenching: Physical Properties of Extremely Compact Starbursts at z~0.1*

Xu, C., Gu, Q.-S., **Xiao, M.-Y.**, et al. 2025, APJ submitted

Contribution: Corresponding author; provided the dataset, led the data analysis, and guided the first author through the project.

2024 *Discovery of a new N-emitter in the epoch of reionization*

Schaerer, D., Marques-Chaves, R., **Xiao, M.-Y.**, et al. 2024, A&A, 687, L11

Contribution: I discovered this new N-emitter and contributed to data analysis and part of the writing.

2022 *GOODS-ALMA 2.0: Starbursts in the main sequence reveal compact star formation regulating galaxy evolution prequenching*

Gómez-Guijarro, C., Elbaz, D., **Xiao, M.-Y.**, et al. 2022, A&A, 659, A196

2022 *GOODS-ALMA 2.0: Source catalog, number counts, and prevailing compact sizes in 1.1 mm galaxies*

Gómez-Guijarro, C., Elbaz, D., **Xiao, M.-Y.**, et al. 2022, A&A, 658, A43

Contribution: Led GOODS-ALMA 2.0 data analysis across both papers; actively shaped collaboration discussions and contributed to interpretation and manuscript drafting.

Contributing Author Papers (Selected)

2025 *JWST+ALMA reveal the build up of stellar mass in the cores of dusty star-forming galaxies at Cosmic Noon*

Bodansky, S., Whitaker, K., Abdullah, A., ..., **Xiao, M.-Y.**, et al. 2025, APJ submitted, arXiv:2507.19472

2025 *Ram-pressure stripping caught in action in a forming galaxy cluster 3 billion years after the Big Bang*

Xu, K. Wang, T., Daddi, E., ..., **Xiao, M.-Y.** et al. 2025, Nature Astronomy submitted, arXiv:2503.21724

2024 *Unveiling dust, molecular gas, and high star formation efficiency in extremely UV-bright star-forming galaxies at* $z \sim 2.1 - 3.6$

Dessauges-Zavadsky, M., Marques-Chaves, R., Schaerer, D., **Xiao, M.-Y.**, et al. 2024, A&A 693, A17

2024 *A new census of dust and polycyclic aromatic hydrocarbons at* $z = 0.7$*-2 with JWST MIRI*

Shivaei, I., Alberts, S., Florian, M.,..., **Xiao, M.-Y.**, et al. 2024, A&A, 690, A89

2024 *NOEMA formIng Cluster survEy (NICE): Characterizing eight massive galaxy groups at* $1.5 < z < 4$ *in the COSMOS field*

Sillassen, N. B., Jin, S., Magdis, G. E., **Xiao, M.-Y.**, et al. 2024, A&A, 690, A55

2024 *Little Red Dots: An Abundant Population of Faint Active Galactic Nuclei at* $z \sim 5$ *Revealed by the EIGER and FRESCO JWST Surveys*

Matthee, J., Naidu, R. P., Brammer, G.,..., **Xiao, M.-Y.**, et al. 2024, ApJ, 963, 129

2023 *The JWST FRESCO survey: legacy NIRCam/grism spectroscopy and imaging in the two GOODS fields*

Oesch, P. A., Brammer, G., Naidu, R. P.,..., **Xiao, M.-Y.** 2023, MNRAS, 525, 2864