Geneva Observatory
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Dr. Romain A. Meyer

RESEARCH INTERESTS

Using a wide range of observational probes and facilities from the optical and infrared to the millimeter domain, I aim to characterise the properties of galaxies in the first billion years of the Universe, their role in cosmic hydrogen reionisation, and their co-evolution with their central supermassive black holes.
Keywords: Cosmic Reionisation, First Galaxies & AGN/SMBH, Multi-wavelength

EMPLOYMENT

Maître-Assistant (Research & Teaching Fellow) April 2023 - Present
Geneva Observatory, University of Geneva, Switzerland
Group of Prof. Pascal Oesch

Postdoctoral Researcher October 2020 - March 2023
Max Planck Institute for Astronomy, Germany
Group of Dr. Fabian Walter

EDUCATION

PhD in Astrophysics 2017 - 2020
University College London, United Kingdom
Thesis: *The Role of Galaxies and Quasars in Reionising the High Redshift Intergalactic Medium*
Supervisor: Prof. Richard S. Ellis

MSc in Physics 2015 - 2017
Ecole Polytechnique Fédérale de Lausanne, Switzerland
Thesis: *PSF Interpolation via Artifical Neural Networks*
Supervisors: Prof. Frédéric Courbin, Dr. Thibault Kuntzer

BSc in Physics 2012 - 2015
Ecole Polytechnique Fédérale de Lausanne, Switzerland / Erasmus at Imperial College, London
Thesis: *Cross-calibration of the Herschel SPIRE instruments*
Supervisor: Prof. Dave Clements, Dr. Rosalind Hopwood

PUBLICATIONS

48 (11 first-author) refereed papers published in major astronomical journals (A&A, MNRAS, ApJ, Nature, PASA) since 2018, totalling 1912 citations and an h-index of 23. The full list of my publications can also be found on NASA ADS or on my ORCID profile.

GRANTS AND THIRD-PARTY FUNDING

SNSF Scientific Exchange (19'200 CHF) October 2024
Funding for the organisation of the Saas-Fee Advanced Course 2025
MERAC funding and travel award (2400 CHF) May 2024
Funding for collaboration visits to support research projects on $z > 6$ quasar host galaxies

AWARDED TELESCOPE TIME

PI-led Programmes:

IRAM/NOEMA Band 3 - 30h 2024
"Characterising the ISM of a z=6.5 post-quasar galaxy" (W24EN)
ALMA Band 1 - 32h 2024
"A survey of cold molecular gas in $z \sim 6.5$ quasars and their companion galaxies" (2024.1.00106.S)
XShooter/VLT - 2.9h 2023
"Characterising a $z \sim 6$ gravitationally-lensed BAL quasar candidate" (113.26CY)
JWST NIRSpec IFU - 10.5h 2022
"Characterizing the Source of Ionising Photons in the Epoch of Reionization" (3767)
Gemini (DDT) Flamingos-2 - 4.2h 2022
"Measuring the mass of the SMBHs powering two lensed $z \sim 6$ quasars" (DT-2022B-029)
NOEMA Band 3 - 12h 2022
"Disentangling the nature of JWST ultra-high-redshift candidates with NOEMA" (W22EG)
MUSE/VLT - 30h 2022
"A conclusive detection of galaxy overdensities around the first luminous quasars" (110.23UT)
ALMA Band 6 - 14.6h 2021
"The Large-Scale Environment of the First Quasars" (2021.1.01557.S)
ALMA Band 8/9 - 16.3h 2021
"Extreme Super-Eddington Star Formation in a Quasar Host at $z \sim 7$?" (2021.1.01350.S)
FOSC2/NTT - 4 nights 2019
"A search for the missing gravitationally-lensed $z \sim 6$ quasars" (0104.A-0662(A))

Selected Co-I Programmes:

JWST - 266h 2024
"COSMOS-3D: A Legacy Spectroscopic/Imaging Survey of the Early Universe"
(PI: K. Kakiichi)
VLT/MUSE - 147h 2023
"The cosmic Ecosystem of the first QSOs and Galaxies" (PI: E. Farina)
ALMA - 49h 2023
"Delivering the Needed Large Samples of Extremely High SFR Sources at $z > 6$
to Characterize Early Stellar+Black-Hole Growth" (PI: R. Bouwens)
JWST - 61h 2021
"A SPectroscopic survey of biased halos In the Reionization Era (ASPIRE)" (PI: F. Wang)

Other Co-I Programmes: 50.7h on the VLT (MUSE/XShooter/FORS2), 231h with ALMA, 155h with JWST, 22h on MEGARA/GTC, 2×0.5 nights on Subaru/IRCS+LGS-AO, 6 nights on NTT, 92h on NOEMA, 38h on GEMINI GMOS, 2 orbits on HST, 333 ks on CHANDRA ACIS-S

STUDENTS SUPERVISION

Alexandre Pozzi, UNIGE MSc Thesis February 2025 - January 2026
Lavinia Arpaia, UNIGE MSc Semester Project Spring 2024
Alexandre Pozzi, UNIGE MSc Semester Project Fall 2023
Xander Byrne, MPIA Summer Internship Summer 2022
1 publication accepted in MNRAS (link here). Xander is now a PhD student at the University of Cambridge.

TEACHING

Guest Lecturer - Galaxies & Cosmology I & II 2024
University of Geneva - 3 MSc level Lectures on the Epoch of Reionisation / AGN / Observational Cosmology
Teaching Assistant 2019
University College London - Classical Mechanics
Teaching Assistant 2016-2017
Ecole Polytechnique Fédérale de Lausanne - 2nd year Physics Labs
Teaching Assistant 2013-2016
Ecole Polytechnique Fédérale de Lausanne - General Physics for Engineers

PROFESSIONAL SERVICE

Saas-Fee Advanced Course 2025 Organiser 27-31 January 2025
EAS 2024 Special Session 1 Co-Organiser and Chair July 2024
EPFL-UNIGE Journal Club Organiser 2023 - Present
Galaxy Coffee Seminar Organiser, MPIA, Heidelberg 2021 - 2022
Walter Group Meetings Organiser, MPIA, Heidelberg 2021 - 2022
ApJ/AJ Reviewer since 2021
MNRAS Reviewer since 2020
Astronomy PhD Student Representative, UCL 2017- 2020

OBSERVING AND TECHNICAL EXPERIENCE

- **Observing experience:** 3 nights on Keck/MOSFIRE, 3 nights on Keck/DEIMOS, 4 nights on NTT/ EFOSC2, 3 nights (remote) on MEGARA/GTC
- **Data reduction & analysis:** optical/NIR multi/long-slit spectroscopy (DEIMOS/Keck, MOSFIRE/Keck, EFOSC2/NTT, GMOS/Gemini, Flamingos2/Gemini, VLT/XShooter), optical IFU (MUSE/VLT), mm interferometry (ALMA/NOEMA), JWST NIRISS/NIRCam WFSS and imaging data, JWST NIRSpec IFU
- **Current main developer** and maintainer of interferopy; an open-source, public python library for radio/mm interferometry data analysis.
- **Computing:** Python, C++, Fortran, IDL
- **Astronomy software:** CASA, GILDAS, ESORex, ESOReflex, PypeIt, DS9, Topcat, SourceExtractor, VPFit, GalSim, GALFIT, Grizli, MIRAGE, JWST pipeline
- **Summer schools:** European Radio Interferometry School 2019, Chalmers, Gothenburg / Astrostat 2021, Penn State (Virtual) / ISM Galaxies 2021, Marseille (Virtual)

TALKS

Invited Talks and Colloquia:

Hamburg Observatory Colloquium January 2025
The ALMA View of Quasars in the First Billion Years
Galaxy Evolution Circle - LAM, Marseille December 2024
Can we solve Reionisation on the scales of individual ionised bubbles?
Cake Talk - DAWN, Copenhagen May 2024
Probing early galaxy formation with an unbiased sample of $6.8 < z < 9$ *[OIII] emitters*

Galaxies Discussion Group - KICC, Cambridge October 2022
A resolved view of $z > 6$ quasar host galaxies
Extragalactic Seminar - UCL, London October 2022
A 100-300 pc view of $z > 6.5$ quasar host galaxies
Young Astronomers on AGN 2022 - DIPC, San Sebastian October 2022
Quasar Host Galaxies at Cosmic Dawn
Astronomy Seminar - University of Southampton March 2022
Quasar Host Galaxies at Cosmic Dawn
Königstuhl Colloquium - MPIA, Heidelberg April 2021
Finding the sources of reionisation
Galaxies Discussion Group - KICC, Cambridge April 2020
IGM-galaxy cross-correlations during Reionization
MPIA Galaxy Coffee - MPIA, Heidelberg November 2019
Probing reionisation with cross-correlations of galaxies and the Lyman-α forest at $z \sim 6$
London Cosmology Discussion Meeting - RAS, London November 2018
Probing the epoch of reionisation with cross-correlations of high-redshift galaxies and the IGM transmission

Contributed Talks:

Views on the multi-phase ISM in galaxies, Bologna, Italy September 2024
Pushing ALMA to the limit: 140-pc resolution [CII] and continuum observations of a z=6.6 quasar-galaxy merger
Observing and Simulating Galaxy Evolution, Ascona, Switzerland August 2024
Constraining early galaxy formation with an unbiased sample of $6.8 < z < 9$ [OIII] emitters
EAS 2023 - Krakow, Poland July 2023
Contributed talks in Symposium 12, Special Session 22 & Poster Presentation in Symposium 8
First Light Conference- MIT, Boston June 2023
A complete census of [OIII]+Hβ emitters at $6.7 < z < 9$ with JWST
Exploring the evolving Universe (RSE@70+) - IoP, London June 2023
A complete census of [OIII]+Hβ emitters at $6.7 < z < 9$ with JWST
From Stars to Galaxies II - Gothenburg, Sweden June 2022
Hyper-resolution observations of $z \sim 6.8$ quasar hosts
Learning the high-z Universe - Sazerac Online Conferece February 2022
Learning from Quasars with VAEs
Quasars and Galaxies Through Cosmic Time - Chile / Online February 2022
Constraining galaxy overdensities around three $z \sim 6.5$ quasars with ALMA and MUSE
RAS Specialist Day - RAS London / Online January 2022
Measuring the contribution of $z \sim 6$ galaxies to reionisation with galaxy-IGM cross-correlations
EAS 2021 - Session 2 - Leiden Observatory / Online July 2021
High-redshift quasar hosts viewed by ALMA and NOEMA
EAS 2021 - Session 7 - Leiden Observatory / Online July 2021
Measuring escape fractions at z$\sim$6 with quasar spectra
SAZERAC 2020 - Online July 2020
Measuring the ionising photon escape fraction of $z \sim 6$ galaxies
EAS 2020 - Leiden Observatory / Online June 2020
Discovery of a double-peaked Lyman alpha emission in a galaxy at $z = 6.802$
KICC 10th Anniversary Symposium - KICC, Cambridge September 2019
Probing the epoch of reionisation with cross-correlations of high-redshift galaxies and the IGM transmission
EAS 2019 (Session 2) - Lyon, France June 2019
Evidence for quasar evolution: rest-frame UV broad lines shifts at $1.5 < z < 7.5$
EAS 2019 (Session 3) - Lyon, France June 2019

A new route to the contribution to reionisation of subluminous $z \sim 6$ galaxies
What matters between galaxies? - Abbazia di Spineto, Firenze, Italy June 2019
Metal-tracing the sources of reionisation
IGM2018: Revealing Cosmology and Reionization History with the Intergalactic Medium - Kavli IPMU, Kashiwa, Japan September 2018
Faint galaxies reionising the IGM at $z \sim 5$: metal-tracing the sources of reionisation

OUTREACH

Geneva Observatory visits 2024 - present
University of Geneva - Visits for general public (adults and children)
Astronomy On Tap London 2020
Co-founder and online host (during Covid-19)
UCL Diploma Club Seminar Organiser 2019 - 2020
Seminar series for graduates of the UCL evening course open to the general public
ORBYTS: Researcher in schools program 2017 - 2019
Outreach programs for highschool pupils of 10 weeks of lectures and research on real data
Mid-Kent Astronomical Society January 31 2020
Outreach talk: Galaxies in the First billion years
Bounce Back RAS200 Project (HMP Brixton) November 4 2019
Outreach to inmates of a London prison - with the RAS and the Bounce Back foundation
UCL Future Frontiers Event Careers Networking Event July 2019
Day of networking/career advice to London pupils from underprivileged background
International Day of Light - UCL May 2018
Day of outreach shows and demonstrations for secondary school pupils

PRESS COVERAGE

- November 2022: "Dans les coulisses des données du télescope spatial James Webb": radio interview and web article with the Swiss public broadcasting organisation RTS on the analysis of early JWST data (article and radio interview in French)
- July 2021: "Cosmic dawn occurred 250 to 350 million years after Big Bang" press release linked to preprint arxiv.org/abs/2104.08168. Covered by the BBC press/TV/radio, the Guardian, the Daily Mail, the Evening Standard and other specialised media. Live interview with BBC World News TV (24/06/21).
- July 2020: EAS press release "Discovery of a luminous galaxy reionizing the intergalactic medium 13 billion years ago", covered by specialised internet media.