

Geneva Observatory  
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# Dr. Romain A. Meyer

## RESEARCH INTERESTS

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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:** IGM Reionisation, First Galaxies, First Quasars, Multi-wavelength

## EMPLOYMENT

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**Maître-Assistant (Research & Teaching Fellow)** Geneva Observatory, Switzerland

*Multi-Wavelength Perspectives of the First Galaxies*

*Member of the group of Prof. Pascal Oesch*

April 2023 - Present

**Postdoctoral Researcher**

Max Planck Institute for Astronomy, Germany

*Galaxies and Quasars in the First Billion Years*

*Member of the group of Dr. Fabian Walter*

October 2020 - March 2023

## EDUCATION

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**PhD in Astrophysics**

University College London, United Kingdom

*Thesis: The Role of Galaxies and Quasars in Reionising the High Redshift Intergalactic Medium*

*Supervisor: Prof. Richard S. Ellis*

September 2017 - August 2020

**Msc in Physics**

Ecole Polytechnique Fédérale de Lausanne, Switzerland

*Thesis: PSF Interpolation via Artificial Neural Networks*

*Supervisors: Prof. Frédéric Courbin, Dr. Thibault Kuntzer*

2015-2017

**Bsc in Physics**

Ecole Polytechnique Fédérale de Lausanne, Switzerland

*Erasmus year at Imperial College, London*

*Thesis: Cross-calibration of the Herschel SPIRE instruments*

*Supervisor: Prof. Dave Clements, Dr. Rosalind Hopwood*

2012-2015

## PUBLICATIONS

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28 (8 first-author) refereed papers published in major astronomical journals (A&A, MNRAS, ApJ, Nature) since 2018 (2019), totalling 750 (194) citations for an h-index of 15 (8). A full list of my publications can be found on [NASA ADS](#) or on my [ORCID](#) profile.

## AWARDED TELESCOPE TIME

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### As PI:

- “Characterizing the Source of Ionising Photons in the Epoch of Reionization”  
10.53h JWST NIRSpec IFU observations of four  $z > 5.8$  galaxies (GO2 3767)
- “Measuring the mass of the SMBHs powering two lensed  $z \sim 6$  quasars”  
4.23h Gemini (DDT) Flamings-2 long-slit spectroscopy (DT-2022B-029)
- “Disentangling the nature of JWST ultra-high-redshift candidates with NOEMA”  
12.0h NOEMA Band 3 follow-up of JWST high- $z$  candidates (W22EG)
- “A conclusive detection of galaxy overdensities around the first ultra-luminous quasars”  
30.0h MUSE/VLT - 8 quasars fields in WFM-NOAO (110.23UT)
- “The Large-Scale Environment of the First Quasars”  
14.6h ALMA - Band 6 mosaics (six pointings) in 7 quasar fields (2021.1.01557.S)
- “Extreme Super-Eddington Star Formation in a Quasar Host at  $z \sim 7$ ”  
16.3h ALMA - 0.”04 resolution Band 8/9 imaging (2021.1.01350.S)
- “A search for the missing gravitationally-lensed  $z \sim 6$  quasars”,  
4 nights on EFOSC2/NTT - Spectroscopic follow-up of  $\sim 40$  candidates (0104.A-0662(A))

**As Co-I:** 197.7h on the VLT (MUSE/XShooter/FORS2), 52.8h with ALMA, 61.6h with JWST/NIRCam, 22h on MEGARA/GTC,  $2 \times 0.5$  nights on Subaru/IRCS+LGS-AO, 92h on NOEMA, 38h on GEMINI GMOS, 2 orbits on HST, 333 ks on CHANDRA ACIS-S

## OBSERVING AND TECHNICAL EXPERIENCE

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- 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, Flamings2/Gemini ), optical IFU (MUSE/VLT), mm interferometry (ALMA/NOEMA), JWST NIRISS/NIRCam WFSS and imaging data
- 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, PyeIt, ds9, Topcat, Source-Extractor, VPFit, GalSim, GALFIT, Grizli
- Summer schools: European Radio Interferometry School 2019, Chalmers, Gothenburg / Astrostat 2021, Penn State (Virtual) / ISM Galaxies 2021, Marseille (Virtual)

## TALKS

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### *Invited Talks:*

#### **Galaxies Discussion Group**

KICC, Cambridge

*A resolved view of  $z > 6$  quasar host galaxies*

October 2022

#### **Young Astronomers on AGN 2022**

Donostia International Physics Center

*Quasar Host Galaxies at Cosmic Dawn*

October 2022

#### **Southampton Astronomy Seminar**

University of Southampton

*Quasar Host Galaxies at Cosmic Dawn*

March 2022

#### **Königstuhl Colloquium**

MPIA, Heidelberg

*Finding the sources of reionisation*

April 2021

#### **Galaxies Discussion Group**

KICC, Cambridge

*IGM-galaxy cross-correlations during Reionization*

April 2020

#### **MPIA Galaxy Coffee**

MPIA Heidelberg

*Probing reionisation with cross-correlations of galaxies and the Lyman- $\alpha$  forest at  $z \sim 6$*

November 2019

#### **London Cosmology Discussion Meeting**

Royal Astronomical Society, London, UK

*Probing the epoch of reionisation with cross-correlations of high-redshift galaxies and the IGM transmission*

November 2018

### *Contributed:*

#### **EAS 2023**

Krakow, Poland

*Contributed talks in S12, SS22, Poster Short Presentation in S8*

July 2023

#### **First Light Conference**

MIT, Boston

*A complete census of  $[OIII]+H\beta$  emitters at  $6.7 < z < 9$  with JWST*

June 2023

#### **Exploring the evolving Universe (RSE@70+)**

IoP, London

*A complete census of  $[OIII]+H\beta$  emitters at  $6.7 < z < 9$  with JWST*

June 2023

#### **Extragalactic Seminar**

UCL, London

*A 100-300 pc view of  $z > 6.5$  quasar host galaxies*

October 2022

#### **From Stars to Galaxies II**

Gothenburg, Sweden

*Hyper-resolution observations of  $z \sim 6.8$  quasar hosts*

June 2022

#### **Sazerac Sip - Learning the high-z Universe**

Sazerac Conference / Online

*Learning from Quasars with VAEs*

February 2022

#### **Quasars and Galaxies Through Cosmic Time**

Chile / Online

*Constraining galaxy overdensities around three  $z \sim 6.5$  quasars with ALMA and MUSE*

February 2022

#### **RAS Specialist Day - Production and Escape of LyC photons**

RAS London / Online

*Measuring the contribution of  $z \sim 6$  galaxies to reionisation with galaxy-IGM cross-correlations*

January 2022

#### **EAS 2021 - Session 2**

Leiden Observatory / Online

*High-redshift quasar hosts viewed by ALMA and NOEMA*

July 2021

**EAS 2021 - Session 7**

Leiden Observatory / Online

*Measuring escape fractions at  $z \sim 6$  with quasar spectra*

July 2021

**SAZERAC 2020**

Online

*Measuring the ionising photon escape fraction of  $z \sim 6$  galaxies*

July 2020

**EAS 2020**

Leiden Observatory / Online

*Discovery of a double-peaked Lyman alpha emission in a galaxy at  $z = 6.802$*

June 2020

**KICC 10th Anniversary Symposium**

Kavli Institute Cambridge, UK

*Probing the epoch of reionisation with cross-correlations of high-redshift galaxies and the IGM transmission*

September 2019

**European Week of Astrophysics and Astronomy 2019 (S2)**

Lyon, France

*Evidence for quasar evolution: rest-frame UV broad lines shifts at  $1.5 < z < 7.5$*

June 2019

**European Week of Astrophysics and Astronomy 2019 (S3)**

Lyon, France

*A new route to the contribution to reionisation of subluminal  $z \sim 6$  galaxies*

June 2019

**What matters between galaxies?**

Abbazia di Spineto, Firenze, Italy

*Metal-tracing the sources of reionisation*

June 2019

**IGM2018: Revealing Cosmology and Reionization History with the Intergalactic Medium**

Kavli IPMU, Kashiwa, Japan

*Lightning talk: Faint galaxies reionising the IGM at  $z \sim 5$ : metal-tracing the sources of reionisation*

September 2018

**European Week of Astrophysics and Astronomy 2018**

Liverpool, UK

*Poster: Cross-correlating CIV absorbers with the Lyman- $\alpha$  forest*

March 2018

## TEACHING

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**Tutorial Assistant**

University College London

*Classical Mechanics Tutorials*

2019

**Tutorial Assistant**

Ecole Polytechnique Fédérale de Lausanne

*Physics Practical Labs*

2016-2017

**Tutorial Assistant**

Ecole Polytechnique Fédérale de Lausanne

*General Physics for Engineers Tutorials*

2013-2016

## PROFESSIONAL SERVICE

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**ApJ/AJ Reviewer**

AAS Journals, Washington DC USA

since 2021

**Walter Group Meetings Organiser**

MPIA, Heidelberg

August 2021 - December 2022

**Galaxy Coffee Seminar Organiser**

August 2021 - December 2022

MPIA, Heidelberg

**MNRAS Reviewer**

since 2020

MNRAS, London

**Astronomy PhD student representative**

2017- 2020

University College London

## OUTREACH

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**Astronomy On Tap**

*Co-founder and online host*

2020

University College London

**Diploma Club Seminar Organiser**

*Organiser of a seminar series for graduates of the UCL evening class*

*Astronomy course open to the general public*

2019 - 2020

University College London

**ORBYTS: Researcher in schools program**

*Outreach programs for highschool pupils of 10 weeks of lectures and research on original data*

2017 - 2019

Various London highschools

**Mid-Kent Astronomical Society**

*Outreach talk: Galaxies in the First billion years*

January 31 2020

Bredhurst Village Hall

**Bounce Back RAS200 Project**

*Astronomy outreach to inmates of a London prison in collaboration with the Royal Astronomical Society and the Bounce Back foundation*

November 4 2019

HMP Brixton

**Future Frontiers Event Careers Networking Event**

*Day of networking/career advice to London pupils from underprivileged background*

July 2019

University City London

**International Day of Light / UCL**

*Day of outreach shows and demonstrations for secondary school pupils*

May 2018

University College London

## PRESS COVERAGE

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- 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](https://arxiv.org/abs/2104.08168). Covered by the [BBC press](#)/TV/radio, [the Guardian](#), the [Daily Mail](#), the [Evening Standard](#) and other specialised media. Interviewed live with the 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](#).