

Adam Carnall

Postdoctoral Research Assistant, Institute for Astronomy, Royal Observatory Edinburgh, EH9 3HJ

2019 - present Postdoctoral Research Assistant – Royal Observatory Edinburgh

Supervisors: Prof. James Dunlop and Prof. Ross McLure

2015 - 2019 PhD Astrophysics – Royal Observatory Edinburgh

Thesis: The star-formation histories of massive quiescent galaxies

Supervisors: Prof. Ross McLure and Prof. James Dunlop

2011 - 2015 MPhys Physics and Astronomy – Durham University

First class honours: final mark 82%

Thesis: A new search for high-redshift quasars

Supervisor: Prof. Tom Shanks

RESEARCH INTERESTS

Galaxy formation and evolution, quiescent galaxies, quenching mechanisms, star-formation histories, spectral fitting, high-redshift spectroscopic surveys, dust attenuation, UVJ diagnostics, Python software development and distribution, Bayesian statistical methods and their computational implementation, high performance computing in astronomy

FIRST-AUTHORED PUBLICATIONS

5. The VANDELS survey: the star-formation histories of massive quiescent galaxies at $1.0 < z < 1.3$, A. C. Carnall et al. [arXiv:1903.11082](#), Mar 2019a
4. How to Measure Galaxy Star Formation Histories. I. Parametric Models, A. C. Carnall et al. *ApJ*, 873:44, Mar 2019b. [doi:10.3847/1538-4357/ab04a2](#)
3. Inferring the star formation histories of massive quiescent galaxies with BAGPIPES: evidence for multiple quenching mechanisms, A. C. Carnall et al. *MNRAS*, 480, 4379, November 2018. [doi:10.1093/mnras/sty2169](#)
2. SpectRes: A Fast Spectral Resampling Tool in Python, A. C. Carnall. [arXiv:1705.05165](#), May 2017
1. Two bright $z > 6$ quasars from VST ATLAS and a new method of optical plus mid-infrared colour selection, A. C. Carnall et al. *MNRAS*, 451, L16, July 2015. [doi:10.1093/mnras/slv057](#)

COAUTHORED PUBLICATIONS

8. The VANDELS survey: the stellar metallicities of star-forming galaxies at $2.5 < z < 5.0$, F. Cullen et al. *MNRAS*, 487(2), 2038–2060, Aug 2019. [doi:10.1093/mnras/stz1402](#)
7. Maximizing the power of deep extragalactic imaging surveys with the James Webb Space Telescope, T. W. Kemp et al. *MNRAS*, 486(3), 3087–3104, Jul 2019. [doi:10.1093/mnras/stz1038](#)
5. How to Measure Galaxy Star Formation Histories. II. Nonparametric Models, J. Leja et al. *ApJ*, 876(1):3, May 2019. [doi:10.3847/1538-4357/ab133c](#)
6. The VANDELS survey: the role of ISM and galaxy physical properties on the escape of $\text{Ly}\alpha$ emission in $z \sim 3.5$ star-forming galaxies, F. Marchi et al. [arXiv:1903.08593](#), Mar 2019
4. The VANDELS ESO public spectroscopic survey, R. J. McLure et al. *MNRAS*, 479, 25, September 2018. [doi:10.1093/mnras/sty1213](#)
3. The VANDELS ESO public spectroscopic survey: Observations and first data release, L. Pentericci et al. *A&A*, 616, 174, September 2018. [doi:10.1051/0004-6361/201833047](#)
2. Two more, bright, $z > 6$ quasars from VST ATLAS and WISE, B. Chehade et al. *MNRAS*, 478, 1649, August 2018. [doi:10.1093/mnras/sty690](#)
1. The VANDELS survey: dust attenuation in star-forming galaxies at $z = 3\text{--}4$, F. Cullen et al. *MNRAS*, 476, 3218, May 2018. [doi:10.1093/mnras/sty469](#)

ACCEPTED TELESCOPE PROPOSALS

- 2019** **The stellar mass-metallicity relation for massive quiescent galaxies at $1.0 < z < 1.5$**
PI, 64 hours, ESO P104, VLT KMOS, 0104.B-0885
- 2015** **Probing the epoch of reionisation with two bright quasars at $z > 6$ from VST ATLAS**
Co-I (PI: T. Shanks), 2 hours, ESO P94, VLT X-SHOOTER, 294.A-5031

AWARDS AND PRIZES

- 2018** Scottish Universities Physics Alliance PECRE Bursary: £1500 travel funding
- 2015** Durham University J. A. Chalmers Prize in Experimental Physics
- 2015** Durham University Summer Research Placement Bursary: £1500 funding for 6 week project
- 2014** Institute of Physics Top 50 Award: £2000 funding for 8 week project at Southampton University
- 2013** Oxford University Summer Research Programme: £1500 funding for 8 week summer project
- 2013** Leicester University SURE Bursary: £2000 funding for 6 week summer project

TALKS AND PRESENTATIONS

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| July 2019 | Talk | Galaxy evolution session, National Astronomy Meeting, Lancaster, UK |
| July 2019 | Talk | MOONS session, National Astronomy Meeting, Lancaster, UK |
| May 2019 | Invited talk | Lega-C team meeting, Ghent, Belgium |
| Mar 2019 | Talk | Geneva Observatory, Switzerland |
| Jan 2019 | Invited talk | The growth of galaxies in the early Universe V, Sexten, Italy |
| Nov 2018 | Talk | IAU Symposium 341: Challenges in panchromatic galaxy modelling with next generation facilities, Osaka University, Japan |
| Oct 2018 | Talk | University of St Andrews, UK |
| Oct 2018 | Seminar | Royal Observatory Edinburgh, UK |
| Sep 2018 | Talk | VANDELS collaboration meeting, Arcetri Observatory, Florence, Italy |
| Apr 2018 | Invited talk | The art of measuring galaxy physical parameters, UC Riverside, USA |
| Jan 2018 | Invited talk | The growth of galaxies in the early Universe IV, Sexten, Italy |
| Jan 2018 | Talk | Durham Edinburgh Extragalactic Conference XIV, Durham, UK |
| Nov 2017 | Talk | Royal Society of Edinburgh Cormack Meeting, Edinburgh, UK |
| Sep 2017 | Talk | VANDELS collaboration meeting, Bologna Observatory, Italy |
| Jun 2017 | Invited talk | Advances in Galaxy Evolution with Surveys, Ringberg Castle, Germany |
| Jun 2016 | Poster | 32nd IAP Colloquium: Cosmic dawn of galaxy formation: linking observations and theory with new-generation spectral models, Paris, France |
| Jan 2016 | Talk | Durham Edinburgh Extragalactic Conference XII, Durham, UK |

TEACHING EXPERIENCE

- 2018** Edinburgh University Numerical Recipes Course: guest lecture on MCMC methods
- 2018** St. Andrews University Research Methods Course: guest lecture on star-formation histories
- 2015 - 2019** Edinburgh University Teaching Assistant: supervised a variety of tutorials and labs

SUPERVISION EXPERIENCE: SUMMER PROJECTS

- 2019** Edinburgh Physics Summer Scholarship, Sam Walker, Finding the first quiescent galaxies
- 2018** Edinburgh Physics Summer Scholarship, Jamie Yellen, Advanced Bayesian methods for galaxy spectral fitting
- 2017** Royal Society of Edinburgh Cormack Scholarship, Joe Cairns (now PhD student at Imperial College London), SCUBA-diving into the deep universe: the origins of massive galaxies

OUTREACH AND PUBLIC ENGAGEMENT

- 2018** Royal Observatory Edinburgh Open Days talk: How many stars are there?
- 2018** Royal Observatory Edinburgh Open Days: organised activity stall explaining spectroscopic surveys using Sloan Digital Sky Survey plate, fairy lights and portable spectrograph
- 2017** Royal Observatory Edinburgh open days talk: Astronomical archaeology: how did galaxies form?
- 2015** Teeside Skeptics talk: What are dark matter and dark energy?