

# 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, 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  $z = 3-4$ , 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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|------------------|--------------|--|
| <b>July 2019</b> | Talk         | Galaxy evolution session, National Astronomy Meeting, Lancaster, UK  |
| <b>July 2019</b> | Talk         | MOONS session, National Astronomy Meeting, Lancaster, UK   |
| <b>May 2019</b>  | Invited talk | Lega-C team meeting, Ghent, Belgium  |
| <b>Mar 2019</b>  | Talk         | Geneva Observatory, Switzerland  |
| <b>Jan 2019</b>  | Invited talk | The growth of galaxies in the early Universe V, Sexten, Italy  |
| <b>Nov 2018</b>  | Talk         | IAU Symposium 341: Challenges in panchromatic galaxy modelling with next generation facilities, Osaka University, Japan                  |
| <b>Oct 2018</b>  | Talk         | University of St Andrews, UK   |
| <b>Oct 2018</b>  | Seminar      | Royal Observatory Edinburgh, UK  |
| <b>Sep 2018</b>  | Talk         | VANDELS collaboration meeting, Arcetri Observatory, Florence, Italy  |
| <b>Apr 2018</b>  | Invited talk | The art of measuring galaxy physical parameters, UC Riverside, USA   |
| <b>Jan 2018</b>  | Invited talk | The growth of galaxies in the early Universe IV, Sexten, Italy   |
| <b>Jan 2018</b>  | Talk         | Durham Edinburgh Extragalactic Conference XIV, Durham, UK  |
| <b>Nov 2017</b>  | Talk         | Royal Society of Edinburgh Cormack Meeting, Edinburgh, UK  |
| <b>Sep 2017</b>  | Talk         | VANDELS collaboration meeting, Bologna Observatory, Italy  |
| <b>Jun 2017</b>  | Invited talk | Advances in Galaxy Evolution with Surveys, Ringberg Castle, Germany  |
| <b>Jun 2016</b>  | Poster       | 32nd IAP Colloquium: Cosmic dawn of galaxy formation: linking observations and theory with new-generation spectral models, Paris, France |
| <b>Jan 2016</b>  | 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?