Adam Carnall

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2019 - 2020 **Postdoctoral Research Assistant – Royal Observatory Edinburgh**
Supervisors: Prof. James Dunlop and Prof. Ross McLure

2015 - 2019 **PhD Astrophysics – Edinburgh University**
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% (top 1%)
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 energy distribution fitting; spectroscopic surveys; dust attenuation; UVJ diagnostics; software development and distribution; Bayesian statistical methods and their implementation; high performance computing in astronomy.

PUBLICATION RECORD

Full list provided separately; 13 accepted peer-reviewed publications, of which 4 as first author, 2 as second author; 235 total citations, of which 115 as first author; h-index: 9 (statistics from NASA ADS on 08/01/2020).

PUBLICLY RELEASED SOFTWARE

BAGPIPES Python software for galaxy spectral fitting (used in 6 peer-reviewed publications to date)
https://github.com/ACCarnall/bagpipes

SPECTRES Python software for resampling spectral data (used in 10 peer-reviewed publications to date)
https://github.com/ACCarnall/spectres

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 International Astronomical Union travel bursary: £1200

2018 Scottish Universities Physics Alliance PECRE Bursary: £1500 travel funding

2015 Durham University J. A. Chalmers Prize in Experimental Physics

2012 - 2015 Durham Physics Award for Outstanding Achievement: Years 1 - 4

2015 Durham University Summer Research 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 Bursary: £1500 funding for 8 week summer project

2013 Leicester University SURE Bursary: £2000 funding for 6 week summer project

SELECTED PRESENTATIONS

Apr 2020	Talk	Where the star formation ends, Lorentz Centre, Leiden, Netherlands
Feb 2020	Talk	Quenching throughout cosmic time, Aspen Center for Physics, CO, USA
Jan 2020	Invited talk	The growth of galaxies in the early Universe VI, Sexten, Italy
Nov 2019	Talk	The art of measuring galaxy physical properties, INAF, Milan, Italy
Jul 2019	Talk	Galaxy evolution session, National Astronomy Meeting, Lancaster, UK
Jul 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	International Astronomical Union Symposium 341: Challenges in panchromatic galaxy modelling with next generation facilities, Osaka University, Japan
Oct 2018	Talk	University of St Andrews, UK
Apr 2018	Invited talk	The art of measuring galaxy physical parameters, UC Riverside, CA, USA
Jan 2018	Invited talk	The growth of galaxies in the early Universe IV, Sexten, Italy
Nov 2017	Talk	Royal Society of Edinburgh Cormack Meeting, Edinburgh, UK
Jun 2017	Invited talk	Advances in galaxy evolution with surveys, Ringberg Castle, Germany

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

2019 - 2022	STFC PhD Studentship: Massissilia Hamadouche (secondary supervisor) Project: The physics of high redshift star-forming galaxies with VANDELS and JWST
2019	Edinburgh Physics Summer Scholarship: Sam Walker (primary supervisor) Project: Finding the first quiescent galaxies
2018	Edinburgh Physics Summer Scholarship: Jamie Yellen (primary supervisor) Project: Advanced Bayesian methods for galaxy spectral fitting
2017	Royal Society of Edinburgh Cormack Scholarship: Joe Cairns (secondary supervisor) Project: SCUBA-diving into the deep universe: the origins of massive galaxies

OUTREACH AND PUBLIC ENGAGEMENT

2018 - 2019	Royal Observatory Edinburgh open days: organised activity stall explaining spectroscopic surveys using Sloan Digital Sky Survey plate, fairy lights and portable spectrograph
2018	Royal Observatory Edinburgh open days talk: how many stars are there in the Universe?
2017	Royal Observatory Edinburgh open days talk: astronomical archaeology: how did galaxies form?
2015	Teeside skeptics in the pub talk: what are dark matter and dark energy?

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., Sep 2019, MNRAS, 490, 417, https://doi.org/10.1093/mnras/stz2544

4. How to measure galaxy star formation histories I. parametric models
A. C. Carnall et al., Mar 2019, ApJ, 873, 44, https://doi.org/10.3847/1538-4357/ab04a2

3. Inferring the star formation histories of massive quiescent galaxies with BAGPIPES
A. C. Carnall et al., Nov 2018, MNRAS, 480, 4379, https://doi.org/10.1093/mnras/sty2169

2. SpectRes: a fast spectral resampling tool in Python (research note not submitted for peer review)
A. C. Carnall, May 2017, arXiv:1705.05165, https://arxiv.org/abs/1705.05165

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., Jul 2015, MNRAS Letters, 451, L16, https://doi.org/10.1093/mnrasl/slv057

CO-AUTHORED PUBLICATIONS

12. The properties of He II 1640Å emitters at $z = 2.5-5$ from the VANDELS survey
A. Saxena et al. (10^{th} author), Nov 2019, A&A, submitted, https://arxiv.org/abs/1911.09999

11. Intergalactic medium transmission towards $z > 4$ galaxies and the impact of dust attenuation
R. Thomas et al. (8^{th} author), Nov 2019, A&A, in press, https://arxiv.org/abs/1911.12532

10. The VANDELS survey: the role of physical properties on Ly-α emission in $z \sim 3.5$ star-forming galaxies
F. Marchi et al. (9^{th} author), Nov 2019, A&A 631, A19, https://doi.org/10.1051/0004-6361/201935495

9. High-velocity outflows in massive post-starburst galaxies at $z > 1$
D. T. Maltby et al. (13^{th} author), Oct 2019, MNRAS, 489, 1139, https://doi.org/10.1093/mnras/stz2211

8. HST Imaging of the Ionizing Radiation from a Star-forming Galaxy at $z = 3.794$
J. Zhiyuan et al. (15^{th} author), Aug 2019, ApJ, submitted, https://arxiv.org/abs/1908.00556

7. The VANDELS survey: the stellar metallicities of star-forming galaxies at $2.5 < z < 5.0$
F. Cullen et al. (8^{th} author), Aug 2019, MNRAS, 487, 2038, https://doi.org/10.1093/mnras/stz1402

6. Maximizing the power of deep extragalactic imaging surveys with the James Webb Space Telescope
T. W. Kemp et al. (5^{th} author), Jul 2019, MNRAS, 486, 3087, https://doi.org/10.1093/mnras/stz1038

5. How to measure galaxy star formation histories II. nonparametric models
J. Leja et al. (2^{nd} author), Apr 2019, ApJ, 876, 3, https://doi.org/10.3847/1538-4357/ab133c

4. Two more, bright, z > 6 quasars from VST ATLAS and WISE
B. Chehade et al. (2^{nd} author), Aug 2018, MNRAS, 478, 1649, https://doi.org/10.1093/mnras/sty690

3. The VANDELS ESO public spectroscopic survey: Observations and first data release
L. Pentericci et al. (10^{th} author), Aug 2018, A&A, 616, A174, https://doi.org/10.1051/0004-6361/201833047

2. The VANDELS ESO public spectroscopic survey
R. J. McLure et al. (11^{th} author), May 2018, MNRAS, 479, 25, https://doi.org/10.1093/mnras/sty1213

1. The VANDELS survey: dust attenuation in star-forming galaxies at $z = 3-4$
F. Cullen et al. (6^{th} author), May 2018, MNRAS, 476, 3128, https://doi.org/10.1093/mnras/sty469