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# Adam Carnall

Astrophysics PhD student working on galaxy spectral modelling and fitting.

## Interests and Skills

- Galaxy formation and evolution
- Bayesian statistical analysis
- Software development in Python
- Machine learning and optimisation techniques
- I also climb mountains in my spare time!

## Education

**2015 – present:** PhD Astrophysics, Royal Observatory Edinburgh

- Thesis title: The star-formation histories of quiescent galaxies
- Supervisors: Prof. Ross J. McLure and Prof. James S. Dunlop

**2011 – 15:** MPhys Physics and Astronomy, Durham University

- Graduated with first class honours: final mark 82%
- Final year project: A new search for high redshift quasars
- Supervisor: Prof. Tom Shanks

**2007 – 11:** GCSEs + A-levels, Thirsk School and Sixth Form College

- A-levels: A\*A\*A\*A\* in Physics, Chemistry, Maths and Further Maths
- AS-levels: AA in Geography and General Studies
- GCSEs: Eight A\* grades and two A grades

## First Authored Publications

**2018:** The VANDELS Survey: The star-formation histories of massive quiescent galaxies at  $1.0 < z < 1.3$  - in preparation, to be submitted to MNRAS

**2018:** How well-motivated are parametric star-formation history models? - in preparation, to be submitted to ApJ

**2018:** Inferring the star-formation histories of massive quiescent galaxies with BAGPIPES - [MNRAS 480, 4379](#)

**2017:** SpectRes: A fast spectral resampling tool in Python - [arXiv:1705.05165](#)

**2015:** Two bright  $z > 6$  quasars from VST ATLAS and a new method of optical plus mid-infrared colour selection - [MNRAS Letters 451, 16](#)

## Coauthored Publications

**2018:** The VANDELS ESO public spectroscopic survey - *R. J. McLure et al. (tenth author)* - [MNRAS 479, 25](#)

**2018:** Two more, bright,  $z > 6$  quasars from VST ATLAS and WISE - *B. Chehade et al. (second author)* - [MNRAS 478, 1649](#)

**2018:** The VANDELS ESO public spectroscopic survey: observations and first data release - *L. Pentericci et al. (tenth author)* - [A&A Accepted](#)

**2017:** The VANDELS survey: Dust attenuation in star-forming galaxies at  $z=3-4$  - *F. Cullen et al. (sixth author)* - [MNRAS 476, 3218](#)

## Software Development

**BAGPIPES:** Bayesian Analysis of Galaxies for Physical Inference and Parameter ESTimation - [bagpipes.readthedocs.io](http://bagpipes.readthedocs.io)

**SpectRes:** Spectral Resampling - [spectres.readthedocs.io](http://spectres.readthedocs.io)

## Conference Talks

**2018:** IAU Symposium 341: Challenges in Panchromatic Galaxy Modelling with Next Generation Facilities, Osaka

- Talk: Advanced panchromatic spectral modelling and fitting with BAGPIPES

**2018:** The Art of Measuring Galaxy Physical Parameters, UC Riverside

- Invited talk: Review of star-formation and chemical-enrichment histories

- Invited talk: Advanced spectral modelling with BAGPIPES

**2018:** The Growth of Galaxies in the Early Universe IV, Sesto

- Talk: Advanced spectral modelling with BAGPIPES

**2018:** Durham Edinburgh Extragalactic Conference XIV, Durham

- Talk: Inferring the SFHs of massive quiescent galaxies with BAGPIPES

**2017:** Royal Society of Edinburgh Cormack Meeting

- Talk: Understanding galaxy quenching with BAGPIPES

**2017:** Advances in Galaxy Evolution with Surveys, Ringberg Castle

- Invited talk: Understanding galaxy evolution with VANDELS

## Awards and Scholarships

**2018:** Scottish Universities Physics Alliance PECRE Bursary

- Funding for five week visit to the Harvard-Smithsonian Center for Astrophysics

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

- Awarded for best final year research project

**2015:** Durham University Summer Research Placement Bursary

- Funded six week summer research project supervised by Prof. T. Shanks

**2014:** Institute of Physics Top 50 Award: Southampton University

- Funded eight week research project supervised by Dr. D. Altamirano

**2013:** Oxford University Summer Research Programme

- Funded eight week summer research project supervised by Dr. R. Houghton

**2013:** Leicester University SURE Bursary

- Funded six week summer research project supervised by Prof. A. Blain

## Teaching and Supervision

**2018:** Edinburgh University Physics Summer Scholarship

- Supervised undergraduate student Jamie Yellen for 8 week project

- Project title: Advanced Bayesian methods for galaxy spectral fitting

**2017:** Royal Society of Edinburgh Cormack Research Scholarship

- Supervised undergraduate student Joe Cairns for 6 week project

- Project title: SCUBA-diving in the deep universe: The origins of massive galaxies

**2015-present:** Edinburgh University Teaching Assistant

- I teach tutorials and labs for a variety of undergraduate courses

## **Outreach, Voluntary Activities and Hobbies**

### **2018: Royal Observatory Edinburgh Doors Open Day Volunteer**

- Organised stall exhibiting ROE research involving spectroscopic surveys

### **2017: Royal Observatory Edinburgh Christmas Ceilidh Organiser**

### **2017 – Present: Edinburgh Physics Postgraduate Forum member**

- Member of staff-student liason committee responsible for delivering student feedback and organising department-wide social events

### **2017: Royal Observatory Edinburgh Doors Open Day Volunteer**

- Outreach talk: Astronomical archaeology: how do galaxies form?

### **2017: Edinburgh University Physics Department Furbush Organiser**

- Organised a week-long outdoor activities trip for PhD students in physics

### **2015 – present: Edinburgh University Hillwalking Club**

- Treasurer 2016-17: Managed a budget of £40,000
- I drive minibuses and lead walks on weekend trips to the highlands

### **2013 – 2015: Durham University Humanist Students Society**

- President 2014 – 15: Organised speaker events, socials and campaigns
- Treasurer 2013 – 14: Managed a budget of £2000

### **2012 – 15: Durham University Cross Country Club Member**