Ed Macaulay

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Postdoctoral Research Positions:

Senior Postdoctoral Research Assistant — **University of Portsmouth** — **Since September 2016**

– Cosmology analysis of spectroscopically confirmed supernovae in the Dark Energy Survey.
– Precise measurement of Hubble's Constant with novel Inverse Distance Ladder method.
– Cross correlation of supernova lensing with shear measurements in DES.

CAASTRO Postdoctoral Research Fellow — **University of Queensland** — **September 2014 to September 2016**

– Detected effects of gravitational lensing and peculiar velocities on supernovae to constrain large scale structure.
– Achieved permanent builder status with Australian Dark Energy Survey.

Fullford Junior Research Fellow — **University of Oxford** — **September 2012 to September 2014**

– Measured first evidence of tension in large scale scale structure between Redshift Space Distortions and Planck CMB measurements.
– Forecast the performance of cosmological survey with the WEAVE instrument.

Education:

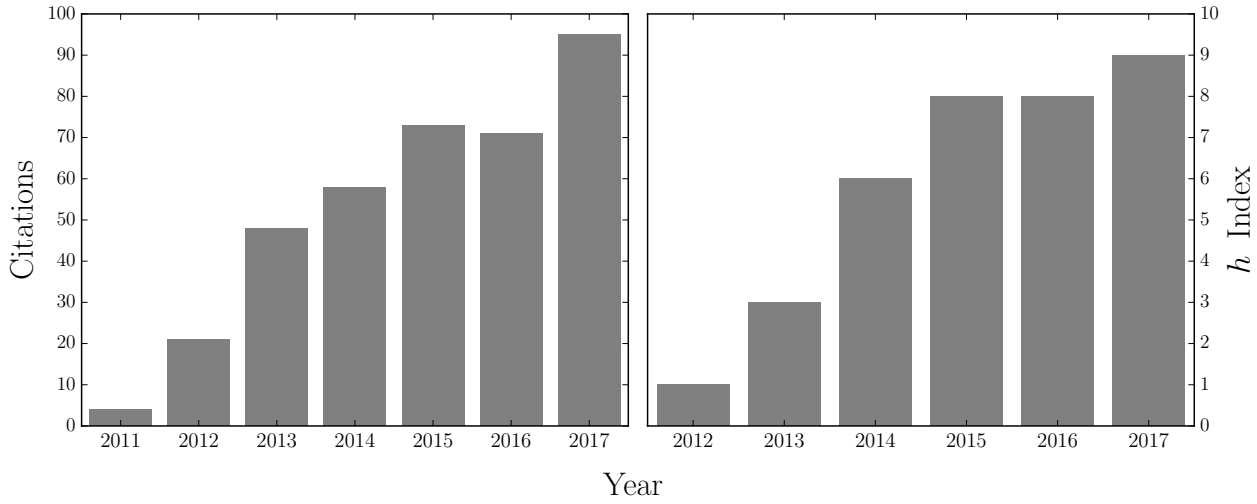
Astrophysics DPhil. — **University of Oxford** — **Graduated 2012**

– Measured the matter power spectrum from the COMPOSITE peculiar velocity catalogue.
– Forecast constraints on axions and neutrino properties with Euclid.
– Assisted with commissioning of the FMOS spectrograph on the Subaru telescope.
– *Thesis:* 'Cosmology with Power Spectrum Measurements from Galaxy Surveys'
http://ora.ox.ac.uk/objects/uuid:bb918260-6747-4133-bdcb-b393d080c6fa

Physics MSci. — **Imperial College, London** — **Graduated 2008**

– *Thesis:* 'Probing the Early Universe With Luminous Quasars'
www.ed-macaulay.com/Macaulay_MSci_report.pdf

Research Output:



Teaching & Supervision:

Guest Lecturer **University of Portsmouth** **December 2017**
– Guest lecturer on supernova cosmology for third year astrophysics course.

Winter Student Supervisor **University of Queensland** **June to August 2016**
– Supervised six undergraduate student projects on supernova peculiar velocities and gravitational lensing, and developing a virtual reality outreach app.

Summer Student Supervisor **University of Queensland** **December 2015 to January 2016**
– Supervised two undergraduate student projects on data analysis with COSMOSIS and simulations of the TAIPAN Fundamental Plane survey.

Guest Lecturer **University of Queensland** **September to October 2015**
– Guest lecturer for honours cosmology course, covering topics such as curvature, inflation, the CMB and nucleosynthesis.

Expert Examiner **University of Queensland** **Since March 2015**
– Provided feedback on reports and conducted oral exams for Honours projects.

Honours Project Supervisor **University of Queensland** **Since January 2015**
– Supervised Honours student for project on the Tully-Fisher relation and cosmological bulk flows.

Admissions Interviewer **Somerville College, Oxford** **December 2013**
– Created physics-based questions and interviewed students for undergraduate admission.

General Relativity **Queen's College, Oxford** **February to June 2012**
& **Cosmology Tutor**
– Tutored third year physics undergraduates, and prepared revision tutorials and handouts.

Computing Demonstrator **University of Oxford** **October 2009 to February 2010**
– Instructed and assessed first year physics undergraduate coding projects in C.

Presentations:

I have presented over 30 seminars at the AIP Potsdam, Australian National University, Berkeley, Caltech, Case Western Reserve, Durham, Harvard, Imperial, MPA Garching, MSSL, Nottingham, Ohio State, Oxford, Penn State, the Perimeter Institute for Theoretical Physics, Southampton, Stanford, Swinburne, UCL, UC Riverside and invited talks at conferences in Brisbane, Haifa, and Oxford.

Observing Experience:

– 4 nights on the AAT for OzDES with the 2dF spectrograph.
– 6 nights remote observing on the AAT for OzDES.
– 12 nights with FMOS on the Subaru telescope.

Outreach:

I am passionate about astrophysics outreach, especially engaging with audiences that are not typically met by science outreach, such as in cafes, pubs, cinemas, and music festivals. I have presented talks at events such as Astronomy on Tap, Cafe Scientifique, Stargazing Live and the Victorious and Blissfields Music festivals, and featured on BBC Radio Solent. I have also presented talks and engaged with outreach events at numerous local schools, university open days, and astronomical societies.