Curriculum vitae

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Employment and Education

- **2013–2014:** Postdoctoral Researcher at the Centre for Astrophysics and Supercomputing, Swinburne University of Technology.
- **2010–2013:** Postdoctoral Researcher at the Max Planck Institute for Astronomy, Heidelberg.
- **2006–2010:** Postdoctoral Research Associate in Astrophysics at the Department of Physics, University of Durham.
- **2001–2006:** PhD in observational cosmology with quasar absorption lines at the University of New South Wales (UNSW), supervised by John Webb.
- **2000:** Tutor and laboratory demonstrator at the Department of Physics, UNSW.
- **1995–1999:** Combined Bachelor of Science/Arts at UNSW. BSc with first class honours in physics, BA in philosophy.
- **1989–1994:** Completed high school and the Higher School Certificate at Newington College, Stanmore in Sydney.

Programming Expertise

I am highly proficient in the programming language Python, including its numerical package NumPy and plotting package Matplotlib. I have contributed code patches to both these projects. I was an organiser and instructor for the 2012 Python workshop at the MPIA. The course notes, to which I contributed, can be found here. I was also invited to coordinate a Python workshop at the European Space Astronomy Centre. The course notes can be found here.

I have experience with IDL, C, Fortran, Javascript and HTML. I believe in transparency and open research and have made much of the code I have written publicly available. Some examples of these projects:

- A Javascript cosmology calculator.
- Barak, a package containing tools for spectral analysis, Voigt profile fitting and other data analysis tasks.
- I led the effort to include a cosmology package in the astropy project.

Professional Activities

- **from 2007:** Reviewer for MNRAS, ApJ and Naturwissenschaften. Invited reviewer for publications by O'Reilly Media.

Awarded telescope time

I regularly obtain time on some of the most highly-subscribed telescopes in the world, including the Hubble Space Telescope, and the Keck, VLT and Gemini 8-metre class telescopes. I am principle investigator for the following successful proposals over the period from 2005 to 2012:

- **Magellan/MagE** (2 nights) M/2014B/02: *The circumgalactic medium of DLAs using quasar pairs*
- **Keck/HIRES** (1 nights) W099Hb: *Measuring the Physical Properties of the Circumgalactic Medium of z~2.5 Star-Forming Galaxies*
- **Magellan/MagE** (2 nights) M/2014B/02: *Measuring the Circumgalactic Medium of DLA-galaxies with Quasar pairs*
- **Magellan/MagE** (2 nights) M/2013B/16: *Measuring the Physical Properties of the Circumgalactic Medium of z~2.5 Star-Forming Galaxies*
- **VLT/FORS** (6 nights) 091.A-0698, 092.A-0739: *Measuring the Physical Properties of the Circumgalactic Medium of z~2.5 Star-Forming Galaxies*
- **VLT/VIMOS** (12 hrs) 088.A-0835: *Revealing the quasars that reionized helium at z=3*
- **VLT/VIMOS** (24 hrs) 086.A-0970: *Gas around Galaxies over the last 7 billion years*
- **VLT/VIMOS** (14 hrs) 085.A-1027: *VIMOS IFU observations of a z=0.23 galaxy close to three background quasar sightlines*
- **HST/COS** (72 orbits) Cycle 17 11585: *Tracing the distribution of gas and galaxies using three closely-spaced background QSOs*
- **VLT/HAWKI** (6 hrs) 383.A-0402: *Tracing the IGM and Galaxy Distributions Using Triple QSO Sight-lines: Stellar Masses with Hawk-I*
- **VLT/VIMOS** (16 hours) 082.A-0731: *Tracing the distribution of gas and galaxies using groups of three closely-spaced background QSOs*
- **Keck/HIRES** (1 night) G301Hr: *A new measurement of the primordial deuterium abundance towards QSO J230302-09*
- **Gemini/GMOS** (9 hrs) GS-2008B-Q-50: *Tracing the IGM-galaxy distribution around three closely-spaced QSO sight-lines*
- **Keck/HIRES** (1 night) GN-2005A-C-2: *Resolving whether the scatter between primordial D/H measurements is real*

I am a co-investigator on more than 20 further successful proposals on the HST (78 additional orbits) and 8m-class telescopes (>30 nights) over the same period.

Observing Experience

- **2014:** 3 nights on VLT/FORS, 2 nights on Magellan/MagE
- **2013:** 2 nights on VLT/FORS, 2 nights on Magellan/MagE
- **2011:** 8 nights on the Large Binocular Telescope using the IR Multi-object Spectrograph LUCI and the Large Binocular Camera.
- **2009:** 1 night at the Subaru telescope using narrow and broad band filters on Suprime-Cam, and 1 night on the Keck telescope with the DEIMOS multi-object spectrograph.
- **2007:** 1 night Keck/HIRES, 3 nights at the Anglo-Australian Telescope using the multi-object spectrograph, AAOmega.
- **2005:** 1 night using Keck/HIRES.
- **2002:** 3 nights at the Mopra millimetre wave telescope at Siding Springs in Australia, looking at hot molecular cores.
- **2001:** ~8 nights observing on the Mount Stromlo and Siding Springs Observatory (MSSSO) 2.3m telescope, targeting QSOs with the Double Beam Spectrograph.
- **1999:** 1 night observing on the MSSSO 40 inch telescope, imaging galaxies.

Awards and Scholarships

- **2002–2004:** Australian Postgraduate Award (competitive 3-year scholarship).
- **2003:** Chosen as a UNSW representative for the Australian Institute of Physics postgraduate awards based on a research presentation.
- **2001:** UNSW postgraduate physics scholarship (1 year scholarship, awarded to 1st class honours candidates).
- **1999:** Vacation research scholarship at the Research School of Astronomy and Astrophysics (Australian National University), Supervisor: Brad Gibson, Topic: Evidence for Sodium and Cyanogen Correlation in 47 Tucanae.
- **1998:** Vacation research scholarship at UNSW, Supervisor: Roberto de Propris, Topic: Photometry of galaxies in Hubble deep field south.
- **1997:** Vacation research scholarship at UNSW, Supervisor: Michael Drinkwater, Topic: Stellar proper motion.
- **1995–1999:** UNSW undergraduate physics scholarship (competitive 4-year award).
- **1995:** Australian Students Prize for Excellence for achieving a mark in the top 0.3% of the state for the Higher School Certificate.

Teaching Experience

- **2014:** Co-supervisor for graduate student Alex Codoreanu.
- **2012:** Instructor for the European Space Agency Centre Python workshop.
- **2011:** Instructor for the MPIA Python workshop.
- **2011–2012:** Assisted in the supervision of PhD students Charles Finn & Nicolas Tejos.
- **2009–2010:** Supervised a summer vacation student David Carton for a 4 week project, "Foreground galaxy absorption in spectra of nearby background galaxies." Assisted in the supervision of two PhD students, Nicolas Tejos and Pimpunyawat Tummuangpak.

- **2009–2010:** Tutor and marker for 2nd year undergraduate physics essays and presentations.
- **2006–2009:** Lab supervisor and marker for the second year undergraduate physics laboratory subject, “Laboratory skills in practice”.
- **1999–2004:** 1st year physics tutor, 1st year physics laboratory demonstrator and supervisor.
- **2001–2004:** Tutor and lecturer for university physics bridging course.
- **1999–2003:** Tutor for general education courses including “Cosmology”, “Are We Alone?” (astrobiology), “Astronomy” and “Illusion or Reality?” (quantum physics and relativity).