

Simon J. Murphy

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Current Position

2018- ARC DECRA Fellow
 Sydney Institute for Astronomy (SfA), University of Sydney, NSW 2006, Australia

Education

2010-2013 PhD “[Investigating the A-type stars with *Kepler* data](#)”, Univ. Central Lancashire, UK.
2007-2010 1st class BSc (Hons) Physics with Astrophysics, University of Manchester, UK.

Prizes and Awards

2018 Vice Chancellor’s Award for Educational Innovation and Engagement, University of Sydney.
2018 Discovery Early Career Researcher Award (DECRA; A\$323,000)
2016 JSPS Overseas Researcher Fellowship, University of Tokyo, Jan-Apr 2016 (¥1.2 mil.)
2014 PhD thesis selected by Springer for publication in their “best of the best” theses series
2012 Prize in “Experienced Presenter” category for oral presentation at UCLan’s Graduate Research Conference (£100)
2011 Competitive research fellowship, Centro de Astrofisica da Universidade do Porto (€3000)
2011 Winner of “Best Poster” category at UCLan’s graduate research conference (£100)
2010 STFC studentship for PhD (£13,500 per annum)
2010 Selina Bright scholarship for best exam results, University of Manchester (£300)
2007 Manchester Advantage Scholarship, University of Manchester (£5000 per annum)

Career Highlights

- Awarded over AU\$300,000 worth of telescope time
- 17 first-author publications (383 citations)
- 40 co-authored publications (981 citations)
- H-index of 12 for first-authored publications (m-index = 1.7)
- H-index of 21 over all publications (m-index = 3.0)

Particular skills and experience

- Automated modelling of binary star orbits using MCMC techniques.
- Expert in Fourier and time-series analysis, particularly of *Kepler* data.
- Investigating the Nyquist limits of specific sampling methods in asteroseismic time series.
- Determining the detectability of binary systems by pulsation timing, in those various time series.
- Expert spectral classifier, especially of B/A/F stars.
- Programmer in four main languages: Ruby, Python, IDL and C++.

First-author refereed publications

17. [Gaia-derived luminosities of Kepler A/F stars and the pulsators fraction across the delta Scuti instability strip](#)
S. J. Murphy, D. Hey, Timothy Van Reeth, T. R. Bedding, et al. (2019), MNRAS, 485, 2380
16. [Finding binaries from phase modulation of pulsating stars with Kepler - V. Orbital parameters with eccentricity and mass-ratio distributions of 341 new binaries](#)
S. J. Murphy, M. Moe, D. W. Kurtz, T. R. Bedding, et al. (2018), MNRAS, 474, 4332
15. [Gaia's view of the lambda Boo star puzzle](#)
S. J. Murphy & E. Paunzen (2017), MNRAS, 466, 546
14. [A planet in an 840-d orbit around a Kepler main-sequence A star found from phase modulation of its pulsations](#)
S. J. Murphy, T. R. Bedding & H. Shibahashi (2016), ApJL, 827, L17
13. [Finding binaries from phase modulation of pulsating stars with Kepler - IV. Detection limits and RV verification](#)
S. J. Murphy, H. Shibahashi & T. R. Bedding (2016), MNRAS, 461, 4215
12. [Near-uniform internal rotation of the main sequence gamma Doradus pulsator KIC 7661054](#)
S. J. Murphy, L. Fossati, T. R. Bedding, H. Saio, D. W. Kurtz, et al. (2016), MNRAS, 459, 1201
11. [An evaluation of the membership probability of 212 lambda Boo stars: I. A Catalogue](#)
S. J. Murphy, C. J. Corbally, R. O. Gray, K. P. Cheng, J. Neff, et al. (2015), PASA, 32, 36
10. [The potential for super-Nyquist asteroseismology with TESS](#)
S. J. Murphy (2015), MNRAS 453, 2569
9. [Deriving the orbital properties of pulsators in binary systems through their light arrival time delays](#)
S. J. Murphy & H. Shibahashi (2015), MNRAS, 450, 4475
8. [A search for non-pulsating, chemically normal stars in the \$\delta\$ Scuti instability strip using Kepler data](#)
S. J. Murphy, T. R. Bedding, E. Niemczura, D. W. Kurtz & B. Smalley (2015), MNRAS 447, 3948
7. [Investigating the A-type stars using Kepler data \(Book, selected by Springer for publication\)](#)
S. J. Murphy (2014), PhDT, Springer, ISBN 978-3-319-09417-5
6. [Finding binaries among Kepler pulsating stars from phase modulation of their pulsations](#)
S. J. Murphy, T. R. Bedding, H. Shibahashi, D. Kurtz & H. Kjeldsen (2014), MNRAS, 441, 2515
5. [Asteroseismology of KIC11754974: a high-amplitude SX-Phe pulsators in a 343-d binary system](#)
S. J. Murphy, A. Pigulski, D. W. Kurtz, J. C. Suárez, G. Handler, et al. (2013), MNRAS, 432, 2284
4. [Super-Nyquist asteroseismology with the Kepler Space Telescope](#)
S. J. Murphy, H. Shibahashi & D. W. Kurtz (2013), MNRAS, 430, 2986
3. [Kepler Fourier concepts: The performance of the Kepler data pipeline](#)
S. J. Murphy (2012), AN 333, 1057
2. [Pulsational amplitude growth of KIC 3420637 \(HD 178875\) in the context of Am and \$\rho\$ Puppis stars](#)
S. J. Murphy, A. Grigahcène, E. Niemczura, D. W. Kurtz, et al. (2012), MNRAS 427, 1418
1. [An examination of some characteristics of Kepler short- and long-cadence data](#)
S. J. Murphy (2012), MNRAS 422, 665

Co-authored Publications

* indicates first author was my student

40. [*The period-luminosity relation for delta Scuti stars using Gaia DR2 parallaxes](#)
E Ziaali, T. R. Bedding, S. J. Murphy, T. Van Reeth, D. Hey (2019) MNRAS, 486, 4348
39. [Spectroscopic confirmation of the binary nature of the hybrid pulsators KIC5709664 found with the frequency modulation method](#)
A. Derezas, S. J. Murphy, G. Dálya, et al. (2019) MNRAS, 486, 2129
38. [*Period spacings of gamma Doradus pulsators in the Kepler field: detection methods and application to 22 slow rotators](#)
G. Li, T. R. Bedding, S. J. Murphy, T. Van Reeth, V. Antoci, et al. (2019) MNRAS, 482, 1757
37. [*A window into delta Scuti interiors: understanding the eclipsing binary system TT Hor](#)
M. Streamer, M. J. Ireland, S. J. Murphy, J. Bento (2018) MNRAS, 480, 1372

Co-authored Publications, continued

* indicates first author was my student

36. [An astrophysical interpretation of the remarkable g-mode frequency groups of the rapidly rotating gamma Doradus star KIC 5608334](#)
H. Saio, T. R. Bedding, D. W. Kurtz, **S. J. Murphy**, V. Antoci, et al (2018), MNRAS, 477, 2183
35. [Asteroseismology of KIC 7107778: a binary comprising almost identical subgiants](#)
Y. Li, D. Huber, T. R. Bedding, D. Stello, **S. Murphy**, et al. (2018) MNRAS, 476, 470
34. [Modelling Kepler red giants in eclipsing binaries: calibrating the mixing-length parameter with asteroseismology](#)
T. Li, T. R. Bedding, D. Huber, W. H. Ball, D. Stello, **S. J. Murphy**, et al. (2018) MNRAS, 475, 981
33. [Asteroseismology of 16000 Kepler red giants: Global oscillation parameters, Masses, and radii](#)
J. Yu, D. Huber, T. R. Bedding, D. Stello, M. Hon, **S. Murphy**, S. Khanna, (2018) ApJS, 236, 42
32. [Theory and evidence of global Rossby waves in upper main-sequence stars: r-mode oscillations in many Kepler stars](#)
H. Saio, D. W. Kurtz, **S. J. Murphy**, V. Antoci, U. Lee (2017), MNRAS, 474, 2774
31. [A spectroscopic and photometric investigation of the mercury-manganese star KIC 6128830](#)
S. Hümmerich, E. Niemczura, P. Walczak, E. Paunzen, K. Bernhard, **S. Murphy** et al. (2018) MNRAS, 474, 2467
30. [KIC 8164262: a heartbeat star showing tidally induced pulsations with resonant locking](#)
K. Hambleton, J. Fuller, S. Thompson, A. Prsa, et al. (incl. **S. J. Murphy**), (2018) MNRAS, 473, 5165
29. [Large amplitude change in spot-induced rotational modulation of the Kepler Ap star KIC2569073](#)
J. Drury, **S. J. Murphy**, A. Derekas, A. Sodor, D. Stello et al. (2017), MNRAS, 471, 3193
28. [Beyond the Kepler/K2 bright limit: variability in the seven brightest members of the Pleiades](#)
T. White, B. Pope, V. Antoci, P. Papics, et al. (incl. **S. J. Murphy**), (2017), MNRAS, 471, 2882
27. [Spectroscopic and Asteroseismic analysis of the remarkable main-sequence A star KIC11145123](#)
M. Takada-Hidai, D. W. Kurtz, H. Shibahasi, **S. J. Murphy**, M. Takata, et al. (2017), MNRAS, 470, 4908
26. [Spectroscopic survey of Kepler stars – II. FIES/NOT observations of A- and F-type stars.](#)
E. Niemczura, M Polinska, **S. J. Murphy**, B. Smalley, Z. Kolaczowski, et al. (2017), MNRAS, 470, 2870
25. [The Discovery of Lambda Bootis stars: The Southern Survey I.](#)
R.O. Gray, Q. Riggs, C. Koen, **S. J. Murphy**, I. M. Newsome, C. J. Corbally, et al. (2017), AJ, 154, 31
24. [Metal-rich SX Phe stars in the Kepler field](#)
J. Nemec, L. Balona, **S. J. Murphy**, K. Kinemuchi, Y.-B. Jeon et al. (2017), MNRAS, 466, 1290
23. [Pulsation vs. metallicity in Am stars as revealed by LAMOST and WASP](#)
B. Smalley, V. Antoci, D. L. Holdsworth, D. W. Kurtz, **S. J. Murphy**, et al. (2017), MNRAS, 465, 2662
22. [A new asteroseismic diagnostic for internal rotation in gamma Doradus stars](#)
R.-M. Ouazzani, S. J. Salmon, V. Antoci, T. R. Bedding, **S. J. Murphy**, et al. (2017), MNRAS 465, 2294
21. [The ANU WiFeS SuperNovA Program \(AWSNAP\)](#)
M. J. Childress, B. E. Tucker, F. Yuan, et al. (incl. **S. J. Murphy**) (2016), PASA, 33, 55
20. [Detection of Solar-Like Oscillations, Observational Constraints, and Stellar Models for Theta Cyg, the Brightest Star Observed by the Kepler Mission](#)
J. Guzik, G. Houdek, W. J. Chaplin, et al. (incl. **S. J. Murphy**), (2016), ApJ, 831, 17
19. [*Asteroseismology of 1523 new red giants observed by Kepler](#)
J. Yu, D. Huber, T. R. Bedding, D. Stello, **S. J. Murphy**, M. Xiang, S. Bi, T. Li (2016), MNRAS 463, 1297
18. [KIC 3749404: a heartbeat star with rapid apsidal advance and indicative of a tertiary component](#)
K. Hambleton, D. W. Kurtz, A. Prsa, S. N. Quinn, J. Fuller, **S. J. Murphy**, et al. (2016), MNRAS 463, 1199
17. [HD 24355 observed by the Kepler K2 mission: A rapidly oscillating Ap star pulsating in a distorted quadrupole mode](#)
D. Holdsworth, D. Kurtz, B. Smalley, H. Saio, G. Handler, **S. J. Murphy**, et al. (2016), MNRAS 462, 876
16. [*Binary star detectability in Kepler data from phase modulation of different types of oscillations](#)
D. L. Compton, T. R. Bedding, **S. J. Murphy**, D. Stello (2016), MNRAS 461, 1943
15. [Amplitude modulation in delta Sct stars: statistics from an ensemble study of Kepler targets](#)
D. M. Bowman, D. W. Kurtz, M. Breger, **S. J. Murphy**, D. L. Holdsworth (2016), MNRAS 460, 1970

Co-authored Publications, continued

* indicates first author was my student

14. [Photometry of very bright stars with Kepler and K2 smear data](#)
B. J. S. Pope, T. R. White, D. Huber, **S. J. Murphy**, T. R. Bedding, et al. (2016), MNRAS Letters, 455, 36
13. [Échelle diagrams and period spacings of g modes in \$\gamma\$ Doradus stars from four years of Kepler observations](#)
T. R. Bedding, **S. J. Murphy**, I. L. Colman, D. W. Kurtz (2015), EPJWC, 101, 01005
12. [*KIC10080943: A binary star with two \$\gamma\$ Dor / \$\delta\$ Sct hybrid pulsators. Analysis of the g modes](#)
M. A. Keen, T. R. Bedding, **S. J. Murphy**, V. S. Schmid, C. Aerts, et al. (2015), MNRAS, 444, 1792
11. [KIC10080943: An eccentric binary containing two pressure and gravity mode hybrid pulsators](#)
V. S. Schmid, A. Tkachenko, C. Aerts, P. Degroote, S. Bloemen, **S. J. Murphy**, et al. (2015), A&A, 584, 35
10. [KIC 4768731: a bright long-period roAp star in the Kepler field](#)
B. Smalley, E. Niemczura, **S. J. Murphy**, H. Lehmann, D.W. Kurtz, et al. (2015), MNRAS, 452, 3334
9. [FM stars II: a Fourier view of pulsating binary stars -- determining binary orbital parameters photometrically for highly eccentric cases](#)
H. Shibahashi, D. W. Kurtz, **S. J. Murphy** (2015), MNRAS, 450, 3999
8. [A unifying explanation of complex frequency spectra of gamma Dor, SPB and Be stars: combination frequencies and highly non-sinusoidal light curves](#)
D.W. Kurtz, H. Shibahashi, **S. J. Murphy**, T. R. Bedding, D. M. Bowman (2015), MNRAS, 450, 3015
7. [Spectroscopic survey of Kepler stars. I. HERMES/Mercator observations of A- and F-type stars](#)
E. Niemczura, **S. J. Murphy**, B. Smalley, K. Uytterhoeven, A. Pigulski, et al. (2015), MNRAS 450, 2764
6. [Asteroseismic measurement of slow, nearly uniform surface-to-core rotation in the main-sequence F star KIC 9244992](#)
H. Saio, D.W. Kurtz, M. Takata, H. Shibahashi, **S. J. Murphy**, et al. (2015), MNRAS 447, 3264
5. [Validation of the frequency modulation technique applied to the pulsating delta Scuti – gamma Doradus eclipsing binary star KIC 8569819](#)
D.W. Kurtz, K.M. Hambleton, H. Shibahashi, **S. J. Murphy**, A. Prsa (2015), MNRAS 446, 1223
4. [The role of turbulent pressure as a coherent pulsational driving mechanism: the case of the delta Scuti star HD187547](#)
V. Antoci, M. Cunha, G. Houdek, H. Kjeldsen, et al. (incl. **S. J. Murphy**) (2014), ApJ 796, 118
3. [Asteroseismic measurement of surface-to-core rotation in a main sequence A star, KIC11145123](#)
D.W. Kurtz, H. Saio, M. Takata, H. Shibahashi, **S. J. Murphy**, T. Sekii (2014), MNRAS 444, 102
2. [Unusual high-frequency oscillations in the Kepler delta Scuti star KIC 4840675](#)
L. A. Balona, M. Breger, G. Catanzaro, M. S. Cunha, et al. (incl. **S. J. Murphy**) (2012), MNRAS 424, 1187
1. [The Kepler characterization of the variability among A- and F-type stars. I. General overview](#)
K. Uytterhoeven, A. Moya, A. Grigahcène, J. A. Guzik, et al. (incl. **S. J. Murphy**) (2011), A&A 534, 125

Invited talks and seminars

- 2019 **Invited review talk**, “[Pulsating stars in binary systems](#),” Stars and their Variability from Space, Vienna, Austria. August 19-23 (upcoming).
- 2018 **Invited review talk**, “[Physics of pulsating stars in binaries](#),” Physics of Oscillating Stars, Banyuls, France. September 3-7.
- 2018 **Invited review talk**, “[Planets by pulsation timing](#),” Exoplanets Orbiting Hot Stars, Nashville, TN, USA. June 20-22.
- 2018 Seminar, “[An exciting haul of planetary, binary and triple systems from pulsation timing](#),”
 - University of New South Wales (UNSW), Australia. October 8th.
 - Mullard Space Sciences Laboratory, UCL, England. August 31st.
 - Warwick University, Coventry, England. August 24th.
 - KU Leuven, Belgium. August 22nd.
 - Appalachian State University, North Carolina, USA. June 14th.

- Monash University, Melbourne, Australia. May 1st.
- Macquarie University, Sydney, Australia. March 23rd.
- 2018 Seminar, “[How to use starquakes to find exoplanets](#)” Univ. of Northern Colorado, USA. Jan 23rd.
- 2017 Seminar, “[An exciting haul of planetary, binary and triple systems from pulsation timing](#),” Australian National University, Canberra, Australia. October 30th.
- 2017 **Invited review talk [declined]**, “[Pulsations of chemically peculiar stars](#),” 2nd LAMOST-Kepler workshop, Brussels, Belgium. June 15th.
- 2016 Seminar, “[Astero seismic detection of planets and other companions to intermediate-mass stars](#),”
 - Macquarie University, Sydney, Australia. November 18th.
 - University of Sydney, Sydney, Australia. November 11th.
 - AAO, Sydney, Australia. November 10th.
 - Max Planck Institute for Astronomy, Heidelberg, Germany. July 8th.
 - Argelander-Institut für Astronomy, Univ. of Bonn, Germany. June 30th.
 - University of Tokyo, Japan. March 29th.
 - Tohoku University, Sendai, Japan. February 29th.
- 2016 **Invited talk**, “[Astero seismology and Galactic Archaeology](#),” Galactic Archaeology Workshop, National Astronomical Observatory of Japan (NAOJ), Mitaka, Japan. March 22nd.
- 2015 **Invited review talk**, “[12 Months of Rapid Advances in our Knowledge of Main-Sequence A and F Stars](#),” KASC 8, Aarhus, Denmark. June 15th.
- 2015 Seminar, “[Finding Binaries Among Pulsating Stars](#),” Univ. of Tokyo, Japan. January 20th.
- 2014 Seminar, “[Finding Binaries Among Pulsating Stars](#),”
 - Keele University, UK. June 13th.
 - Univ. Central Lancashire, Preston, UK. June 11th.
 - Aarhus University, Denmark. May 14th.
- 2014 Seminar, “[Beyond Transits \(the cool stuff you can do with Kepler data\)](#),” Australia National University, Canberra, Australia. March 19th.
- 2013 **Invited review talk**, “[Main sequence A-F pulsators](#),” KASC6, Sydney, Australia. June 27th.
- 2013 Seminar, “[Investigating the Intriguing A-type stars](#),”
 - Polish Academy of Sciences, Warsaw, Poland. April 17th.
 - Univ. of Wroclaw, Poland. April 15th.
 - Univ. of Birmingham, UK. February 6th.
- 2012 Seminar, “[Pulsating A-type stars seen with Kepler](#),” Univ. of Porto, Portugal. November 14th.

Contributed talks and poster presentations

- 2019 Conference talk, “[Pulsating stars in binary systems](#).” At *Kepler & K2 Sci Con V*, Glendale CA, USA. 4-8 March 2019 (upcoming).
- 2018 Conference talk, “[Pulsating stars in binary systems](#).” At *Stars in Canberra*, UNSW Canberra, Australia. 28-30 November 2018. Date of talk: November 29th.
- 2017 Conference talk, “[Compact objects and hierarchical triples: Kepler delta Scuti stars in binary and multiple systems](#).” At *TESSing Stellar Astrophysics, TASC3-KASC10*, Birmingham, UK. 16-21 July 2017. Date of talk: July 19th.
- 2016 Conference talk, “[Kepler’s non-eclipsing binary population for delta Scuti stars](#).” At *Understanding the roles of rotation, pulsation and chemical peculiarities in the upper main sequence*, Windermere, UK. 12-16 September 2016. Date of talk: September 16th.
- 2016 Conference talk, “[Astero seismic detection of invisible companions to intermediate-mass stars](#).” At *Seismology of the Sun and distant stars*, Terceira, Portugal. 11-15 July 2016. Date of talk: July 15th.
- 2015 Poster, “[Super-Nyquist Astero seismology with TESS](#).” At *K2 Science Conference*, Santa Barbara, USA, 2-5 November 2015

- 2014 Conference talk, “[Finding Binaries Among Pulsating Star.](#)” At *CoRoT3-KASC7*, Toulouse, France. 7-11 July 2014. Date of talk: July 10th.
- 2012 Prize-winning talk, “[Highlights of research with the Kepler space telescope.](#)” At *UCLan Graduate Research Conference*, Preston, UK. 3-5 July 2012. Date of talk: July 5th.
- 2012 Conference talk, “[KIC 3429637 and the problem of pulsating Am stars.](#)” At *KASC 5*, Balaton, Hungary. 18-22 June 2012. Date of talk: June 21st.
- 2012 Conference talk, “[Kepler Fourier Concepts.](#)” At *The Modern Era of Helio- and Asteroseismology*, Obergurgl, Austria. 21-25 May 2012. Date of talk: May 24th.
- 2012 Poster, “[Are the constant stars in the delta Scuti instability strip chemically peculiar?](#)” At *National Astronomy Meeting*, Manchester, UK. 27-30 March 2012.
- 2012 Conference talk, “[Kepler Fourier concepts.](#)” At *Exoplanets and their host stars*, Oxford, UK. 12-16 March 2012. Additional presentation “[Stellar population synthesis.](#)” Date of talk: March 16th.
- 2011 Poster, “[Are the constant stars in the delta Scuti instability strip chemically peculiar?](#)” At *First Kepler Science Conference*, NASA Ames, California, USA. 5-9 December 2011.
- 2011 Conference talk “[A highly non-linear delta Scuti star.](#)” At *KASC 4*, Boulder, Colorado, USA. 11-15 July 2015. Date of talk: July 14th.
- 2011 Prize-winning poster, “[A highly non-linear delta Scuti star.](#)” At *UCLan Graduate Research Conference*, Preston, UK. May 2011.

Leadership, Governance and Service

- Ongoing Reviewer for world-leading astronomical journals (e.g. MNRAS, ApJ, PASA).
- Ongoing First-aid officer, emergency warden and fire warden, School of Physics, Univ. of Sydney.
- 2019 **Chief Investigator**, SONG Australis, awarded \$159k by ARC.
- 2019 SOC, TASC4/KASC10 conference, MIT Boston, USA, 22-26 July 2019.
- 2018 **Chief Investigator**, LIEF grant Veloce Verde+Azzuro, awarded \$790k by ARC.
- 2018 **Chair**, SOC & LOC: *Planets in Peculiar Places*, Univ. of Sydney, April 5-6 2018.
- 2018 SOC: *Physics of Oscillating Stars*, Banyuls, France, to be held September 2-7th 2018.
- 2018 Postgraduate progress review panel member, both semesters.
- 2017 **Chair**, Hunstead Lecture Series, School of Physics, Univ. of Sydney.
- 2017-present Member of the Physics Equity and Access Committee, School of Physics, Univ. Sydney.
- 2016 SOC: *Understanding the roles of rotation, pulsation and chemical peculiarities in the upper main sequence*, Lake District, UK. 2016 September.
- 2016-present Member of the TESS Asteroseismic Science Consortium (TASC) working groups on main-sequence pulsators and compact objects, contributing feasibility studies for detecting pulsations, binary stars, and selecting targets.
- 2015 Organiser and chair of SIfA’s ‘Morning Tea’ (weekly departmental meeting).
- 2014 Invited external reviewer for MSc thesis, Univ. of Canterbury, New Zealand.
- 2013-2015 Actively involved in organising the Kepler Asteroseismic Science Consortium (KASC) working group on classical pulsators (formerly delta Scuti stars). Chair of the time-series analysis sub-group for classical pulsators.
- 2010-present Fellow of the Royal Astronomical Society

Student supervision

- Graduate students **current, PhD:** Li Gang, Doug Compton, Jie Yu, Daniel Hey
current, MPhil: Filip Chatys, Margaret Streamer (ANU)
- Senior Phys. Special Project **2018:** Helena Lecoq, Nic Barbara
2015: Nicholas Ranson, Matt Winnel.
2014: Isabel Colman, Alan Hotham, Matt Keen.
- Talented Student Programme **2018:** Aiden Chen, Eloisa Perez-Bennets

	2017: Oscar McMullin, Mingqian Chen. TSP showcase.
	2016: Nic Barbara, Sarah Collison, Jess Hamley, Emily Kerrison.
	2015: Edric Wang.
	2014: Angus Johnson, Keri Liang.
Summer Vacation Projects	2018-2019: Nic Barbara
	2015-2016: Aleksa Sarai, Matt Winnel.
	2014-2015: Angus Johnson, Matt Keen.
Visiting International Student	2018: Elham Ziaali (RIAAM, Iran)
	2016: Yaguang Li (Beijing Normal, China)
	2015: Nero Qilao Gu (Nanjing, China)

Teaching

2018-present	Designing a new OLE (open learning environment) in physics and developing the course content and assessments. Course running from Semester 1 2019.
2016-2017	Designing learning modules, selecting delivery methods and developing assessment tools for a massively open online course (MOOC) on Big Data in Astronomy for The University of Sydney. Our development team was awarded the Vice Chancellor's award for Educational Innovation and Engagement for this work.
2013-2015	One lab and one tutorial group for 1 st /2 nd -year astronomy at The University of Sydney.
2015	Guest lecturer for 3 rd -yr undergraduate astrophysics, and for the Talented Student Programme, at The University of Sydney.
2011-2012	Demonstrated astronomy lab for first year undergraduates at UCLan's Alston observatory.
2011-2012	Demonstrated C++ lab for second-year undergraduates.
2010-2012	Assessed a variety of UCLan's distance-learning undergraduate-level modules.
2010	Edited course notes for second-year solar system physics course.
2009	Three-week secondary school teaching placement, University of Manchester Student Associates Scheme.

Observing

I predominantly work with Kepler data, which are public. I have also been awarded over **\$300,000** worth of time on large ground-based optical telescopes, including: **[estimated total value in AUD brackets]**

- 3 nights observing (conducted by co-I) on the 10-m Keck Telescope; **[\$220,000]**
- 2 half-nights of service-mode observations on the 8-m Subaru Telescope; **[\$46,000]**
- 17 nights observing on the ANU 2.3-m telescope at Siding Spring; **[\$25,000]**
- 6 nights on the 2.7-m Harlan J Smith Telescope at Macdonald Observatory; **[\$8000]**
- 4 nights observing on the 6 x 1-m CHARA array; **[\$4000]**
- 5 half-nights of service-mode observations on the 2.5-m Nordic Optical Telescope; **[\$3000]**
- 8.5 nights (67 hours) of service mode observations on the 1.2-m Mercator Telescope; **[\$5000]**
- 5 half-nights observing (conducted by co-I) on the 1.5-m Loiano Telescope; and **[\$1700]**
- 15 nights on the 32" telescope at Dark Sky Observatory. **[\$5100]**

Fundraising for travel

Since the 7th annual Kepler Asteroseismology Science Consortium (KASC) conference in 2014, all travel and accommodation for KASC conferences have been funded by membership as a node of the Stellar Astrophysics Centre (SAC), headquartered at Aarhus University, Denmark.

In addition, I competed for full/partial funding (or for paid participation) to following meetings:

- 2015 Pulsating stars workshop and seminar, Japan; externally funded for local costs (¥162,000).
- 2013 *KASC6*, Australia; awarded an RAS travel grant (£1250).
- 2012 *10th NEON Observing School*, Italy; externally funded for all costs except travel.
- 2012 *KASC 5*, Hungary; awarded competitive funding for £200 of travel costs.
- 2012 *The Modern Era of Helio- and Asteroseismology*, Austria; externally funded for all costs except travel.
- 2012 *Exoplanets and their Host Stars*, UK; fully funded by the STFC.
- 2011 *First Kepler Science Conference*, USA; externally funded for US\$1500.

Outreach

- 2017 Seven radio interviews and two nationally aired TV news interviews on the TRAPPIST-1 system.
- 2016 Three-minute television feature on Today, Tonight Adelaide, on Kepler's exoplanets. May 11th.
- 2015 Assisting with amateur astronomy research projects and an astronomy-related PhD art project.
- 2014 "Visiting Astronomer" for four 1-hr talks at Bourne Grammar School, UK, July 3rd.
- 2013 Public talk, "[Planets and Pulsations](#)," Society for Popular Astronomy, 60th Anniversary Meeting, Preston, UK. May 11th.
- 2012-3 Astrofest, London. 10-12 February 2012 and 8-10 February 2013.
- 2012 Lancashire Science Festival, behalf of the Institute of Physics. 30 June 2012.
- 2012-3 Part of UCLan's graduate outreach programme as a STEMNET ambassador.

References

Name	Address	Email
Prof. Timothy R. Bedding	Sydney Institute for Astronomy, School of Physics, University of Sydney, Australia.	tim.bedding@sydney.edu.au
Prof. Hiromoto Shibahashi	Dept. of Astronomy, The University of Tokyo, Tokyo 113-0033, Japan.	h.shibahashi@gmail.com
Prof. Donald W. Kurtz	Jeremiah Horrocks Institute, University of Central Lancashire, Preston PR1 2HE, UK.	kurtzdw@gmail.com
Prof. Richard O. Gray	Dept. of Physics and Astronomy, Appalachian State University, Boone, NC 26808, USA.	grayro@appstate.edu