

### Academic Career

|   |   |                     |
|---|---|---------------------|
| <b>Associate Professor (Reader)</b>   | University of Exeter                              | Jul. 2019–Present   |
| Senior Lecturer   | University of Exeter                              | Apr. 2015–Jul. 2019 |
| Lecturer (Assistant Professor)  | University of Exeter                              | Jan. 2014–Apr. 2015 |
| Research Fellow   | University of Exeter                              | Jul. 2011–Jan. 2014 |
| Associate Research Fellow   | University of Exeter                              | Jul. 2008–Jul. 2011 |
| PhD   | Supervisor: Prof. T. Naylor, University of Exeter | Sep. 2004–Jun. 2008 |
| “Using colour–magnitude diagrams to study the evolution of young stellar populations” |   |                     |
| MPhys (hons), 1 <sup>st</sup> Class   | Univ. of Exeter (Supvr: Prof. W. Barnes)          | Sep. 1999–Jun. 2003 |
| Dissertation subject: surface plasmon resonance                                       |   |                     |
| Two Dean’s commendations & school prize for outstanding results                       |   |                     |

### Career Summary & Highlights

**Research, Impact & Knowledge Exchange:** I currently lead a large research group (Exeter Exoplanet Theory Group, EETG, ~25 members) at the forefront of world research into the climates of exoplanets (planets outside the solar system). Uniquely, we study both gas giant and terrestrial exoplanets, as well as solar system objects, linking to Earth itself through a strong collaboration I have built with the Met Office, using a shared development framework.

I am a recognised leader in my field, and have been involved in a total of ~£4.5 Million in research funding awards, with ~£2.6 Million as PI (~£1.9 Million as PI since promotion to Associate Professor) from diverse funding streams. I have published 56 articles (+6 under review/submitted) with 1891 citations and a *h*-factor of 26<sup>1</sup> (compared to 38 articles, 1057 citations and *h*-factor of 19 at promotion to Associate Professor). I have been invited to present 30 seminars and 15 conference talks, and am involved in the organisation of several major conferences (e.g., Exoclines, UK Exoplanet Community Meeting, RAS Specialist Discussion Sessions). I have been involved in the supervision of 8 PhD students, 4 of which have rapidly obtained permanent positions in research, as well as acting as assessor for 3 PhD students.

I have delivered a huge number of public engagement and media activities, and am lead author of a Research Excellence Framework (REF)<sup>2</sup> impact case study, alongside contributing to the University of Exeter Knowledge Exchange Framework (KEF) submission.

**Education:** I have supervised 24 undergraduate student’s projects, contributed to many undergraduate modules, and lead a core module receiving outstanding student feedback; average score 4.5/5.0, overall learning experience 4.7/5.0 & online resources 4.9/5.0<sup>3</sup>. I have been nominated for a University of Exeter teaching award twice (2010, 2019), and brokered provision of Masters projects in collaboration with the Cornwall Spaceport.

**Academic Citizenship:** I was a co–author on the successful University of Exeter Physics and Astronomy submissions to the Institute of Physics (IOP) Juno Champion and Athena Swan Silver and Bronze awards. I have acted as stage one coordinator, assistant director of education and admissions tutor for Physics and astronomy, and currently sit on the Space & Extreme Environments Institute task group, Research–IT Service Owner’s board, Creative Industries Strategy Group and Public Engagement Advisory Group. Finally, I was recognised with a "Dean’s Outstanding Contribution" and shortlisted for the "Diversity and Outreach" College of Engineering, Mathematics and Physical Sciences awards in 2019.

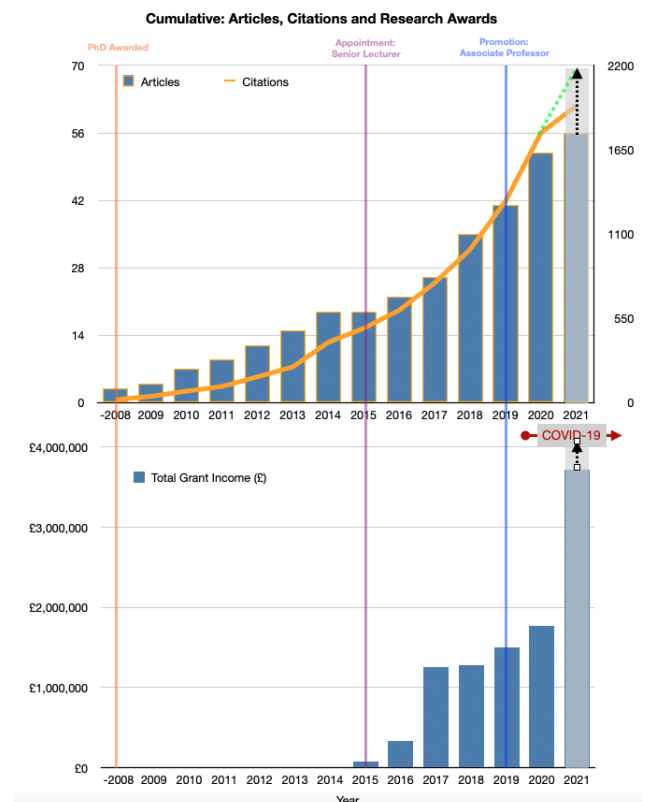


Fig. showing sustained, and accelerating publication metrics and grant awards. As 2021 is in progress current values, and reasonable projections (arrows & dotted line) are shown.

<sup>1</sup>Derived using NASA ADS on 6<sup>th</sup> May, 2021, which provides full analysis of publication metrics

<sup>2</sup>The primary mechanism used to assess the research performance of UK Universities

<sup>3</sup>Scores from the Univ. Exeter Accelerate student feedback survey, based on a high cohort response rate of 20%

## Research and Publications

I have a strong and sustained track record of resource awards, from diverse sources, acting as both a principal and co-investigator. Additionally, I have a strong track record of high-quality publications. Direct funding with estimated total amounts, and resource awards with estimated values, followed by publications are listed below.

| <b>Direct Funding: PI</b> |   | <b>Est. Total Value</b> |
|---------------------------|---|-------------------------|
| 2021                      | Simons Foundation: Simons Investigator (UoE Nomination, <u>submitted</u> )  | [~£500 000]             |
| 2021                      | Institute of Physics: Bell–Burnell PhD Scholarship (Mei Ting Mak)   | ~£77 000                |
| 2021                      | UKRI: Future Leaders Fellowship   | ~£1 600 000             |
| 2020                      | DiRaC: Research Software Engineer Support   | ~£50 000                |
| 2020                      | Leverhulme: Research Project Grant  | ~£210 000               |
| 2019                      | STFC: Nucleus Award   | ~£125 000               |
| 2019                      | Hill Family PhD Scholarship & Diamond Jubilee Fund (Jake Eager)   | ~£90 000                |
| 2018                      | Impact Fund: STFC consolidated grant  | ~£28 000                |
| 2017                      | STFC Consolidated Grant: sub–project  | ~£300 000               |
| 2017                      | Impact Fund: IIB and CEMPS (internal)   | ~£21 000                |
| 2017                      | International Excellence Scholarship (awarded: student declined) (internal)   | [~£131 000]             |
| 2016                      | Leverhulme: Research Project Grant  | ~£250 000               |
| 2015                      | Univ. Exeter PhD Studentship (internal)   | ~£80 000                |
| 2015–present              | Minor Awards Total (e.g., travel grants, internships, equipment etc.)   | ~£50 000                |
| 2013–present              | Met Office Academic Partnership (MOAP): staff secondments<br>total of five seconded staff, various time allocations | ~£150 000               |

| <b>Direct Funding: Co-I</b> |   | <b>Est. Total Value</b> |
|-----------------------------|---|-------------------------|
| 2021                        | Leverhulme Research Centre (PI: C. Watson, Queen’s Univ. Belfast, <u>submitted</u> )  | [~£10 000 000]          |
| 2021                        | NERC Standard Grant (PI: J. Manners, <u>submitted</u> )                               | [~£300 000]             |
| 2021                        | UKRI: Infrastructure Advisory Committee (PI: B. Biller, Edinburgh, <u>submitted</u> ) | [~£3 500 000]           |
| 2021                        | Leverhulme: Research Project Grant (PI: M. Green, Bangor)                             | ~£250 000               |
| 2021                        | STFC: Spark (project partner, PI: Exeter Science Centre)                              | ~£15 000                |
| 2020                        | STFC: Spark (project partner, PI: We The Curious)                                     | ~£15 000                |
| 2017                        | STFC Consolidated Grant (PI: I. Baraffe)  | ~£1 800 000             |
|                             | Sub-Project: STFC Consolidated Grant project (PI: H. F. Lambert)                      | [~£300 000]             |
|                             | Sub-Project: STFC Consolidated Grant project (PI: E. Hébrard)                         | [~£300 000]             |

| <b>High Performance Computing Resources</b> |  | <b>Est. ‘In-kind’ Value</b> |
|---|--|-----------------------------|
| 2021  | DiRAC:, ~20 million CPU hrs (PI: Prof. M. Bate)                            | ~£1 000 000                 |
| 2020  | DiRAC:, ~18 million CPU hrs (PI: Prof. M. Bate)                            | ~£1 000 000                 |
| 2019  | DiRAC:, ~62 million CPU hrs (PI: Prof. M. Bate)                            | ~£2 500 000                 |
| 2018  | DiRAC:, ~22 million CPU hrs (PI: Prof. M. Bate)                            | ~£900 000                   |
| 2017  | DiRAC: ~23 million CPU hrs (PI: Prof. M. Bate)                             | ~£900 000                   |
| 2015  | DiRAC: ~75 million CPU hrs (PI: Prof. M. Bate)                             | ~£3 000 000                 |
| 2015–present                                | MONSooN: ~320 000 CPU hrs/year<br>Rolling allocation (PI: Prof. P. Palmer) | ~£14 000                    |
| 2015–ongoing                                | MONSooN: ~160 000 CPU hrs/year<br>Rolling allocation (PI: Dr J. Manners)   | ~£7 000/yr                  |
| 2012  | DiRAC: ~26 million CPU hrs (PI: Prof. M. Bate)                             | ~£1 000 000                 |

| <b>Observational Facilities Resources</b> |   | <b>Est. ‘In-kind’ Value</b> |
|---|---|-----------------------------|
| 2021                                      | JWST: 44.7 Primary Spacecraft Hours in Cycle 1 (PI. Dr T. Evans)            | Pending                     |
| 2019                                      | HST: 14 Orbits (PI. Prof. D. Sing)  | ~£100,000                   |
| 2019                                      | HST: 60 Orbits (PI. Dr T. Evans)  | ~£500,000                   |
| 2019                                      | Spitzer DDT: 24 hrs, spectroscopy (PI. Dr N. Nikolov)                       | ~£500 000                   |
| 2017                                      | Spitzer DDT: 80 hrs, phase curve (PI: Dr T. Evans)                          | ~£1 000 000                 |
| 2016                                      | ESO SPHERE: 11 hrs, imaging (PI: E. Matthews)                               | ~£35 000                    |
| 2016                                      | ESO FORS2, Large programme ~13 nights, spectroscopy<br>(PI: Dr N. Nikolov)  | ~£400 000                   |
| 2016                                      | ESO SPHERE: 1 night, polarisation<br>(PI: Prof. S. Hinkley)                 | ~£30 000                    |
| 2016                                      | ESO SPHERE, NACO DDT: 8 hrs, imaging)<br>(PI: Prof. S. Hinkley)             | ~£25 000                    |
| 2015                                      | ESO SPHERE: 16 hrs, imaging (PI: Prof. S. Hinkley)                          | ~£50 000                    |
| 2015                                      | ESO SPHERE: 16 hrs, imaging (PI: Prof. S. Hinkley)                          | ~£50 000                    |
| 2014                                      | ESO SPHERE: 18 hrs, imaging (PI: Prof. S. Hinkley)                          | ~£55 000                    |
| 2012                                      | Isaac Newton Telescope (INT): 7 nights, photometry<br>(PI: Prof. T. Naylor) | ~£25 000                    |
| 2011                                      | William Herschel Telescope (WHT): 3 nights,                                 |                             |

|      |  |           |
|------|--|-----------|
|      | multi-fibre spectroscopy                                     | ~£51 000  |
| 2010 | Liverpool Telescope (LT): photometry (PI: Prof. T. Naylor)   | ~£8 500   |
| 2009 | Gemini: multi-object spectroscopy (PI: Prof. T. Naylor)      | ~£51 000  |
| 2008 | WHT: multi-fibre spectroscopy (PI: Prof. T. Harries)         | ~£17 000  |
| 2008 | WHT: multi-fibre spectroscopy (PI: Prof. T. Naylor)          | ~£51 000  |
| 2008 | INT: photometry (PI: Prof. T. Naylor)                        | ~£30 000  |
| 2008 | INT: photometry (PI: Prof. T. Naylor)                        | ~£5 000   |
| 2007 | INT: photometry (PI: Prof. T. Naylor)                        | ~£30 000  |
| 2007 | WHT: multi-fibre spectroscopy (PI: Prof. T. Harries)         | ~£17 000  |
| 2006 | WHT: multi-fibre spectroscopy (PI: Prof. T. Naylor)          | ~£102 000 |
| 2005 | WHT: multi-fibre spectroscopy (PI: Prof. T. Naylor)          | ~£51 000  |
| 2005 | Gemini: multi-object spectroscopy (PI: Prof. R. D. Jeffries) | ~£51 000  |

## Publications

NASA ADS (as of 6<sup>th</sup> May, 2021): Refereed Journal Articles: 56 with 1917 citations, **h-index: 26**  
(Primary/lead author<sup>4</sup>: 27 with 827 citations, first/sole author: 9 with 376 citations)

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### Refereed Publications in Major Journals (reverse date ordered)

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# Journal, title and Author(s), # denotes primary/lead author. Authors working in my research group are in **boldface**, and also underlined if at undergraduate level during project e.g., Lewis, N.

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- 62 Submitted for Publication in *Geology*.  
(abridged): CO<sub>2</sub> and O<sub>2</sub> oxidised 2.7 Ga micrometeorites...suggesting a >32% CO<sub>2</sub> atmosphere  
**Huang, G.**; Lenton, T.; **Eager, J.**; **Mayne, N. J.**; Cui, D.; Manners, J.; Hébrard, E.; Liu, Z.; Gong, P.
- 61 Submitted for Publication in *Monthly Notices of the Royal Astronomical Society*.  
The Impact of Mixing Treatments on Cloud Modelling in 3D Simulations of Hot Jupiters  
**Christie, D.**; **Mayne, N.**; **Lines, S.**; Parmentier, V.; **Manners, J.**; **Boutle, I.**; **Drummond, B.**; et al.
- 60 Submitted for Publication in *Monthly Notices of the Royal Astronomical Society*.  
(abridged)..Population Trends in Thermal Emission.. of Hot Jupiters....  
Goyal, J.; Lewis, N.; Wakeford, H.; MacDonald, R. & **Mayne, N. J.**
- 59 Under Review for Publication in *Monthly Notices of the Royal Astronomical Society*.  
(abridged)..a featureless transmission spectrum for the low-density transiting exoplanet WASP-88b.  
Spiratos, P.; Nikolov, N. et al., incl. **Mayne, N. J.**
- 58 Under Review for Publication in *Nature*.  
Diurnal variations in the stratosphere of an ultrahot exoplanet  
Mikal-Evans, T.; et al., incl. **Mayne, N.**
- 57 Under Review for Publication in *The Astrophysical Journal*.  
(abridged)..Faculae and clouds explain the optical spectrum of the warm Saturn WASP-110b.  
Nikolov, N.; Maciejewski, G.; Constantinou, S.; Madhusudhan, N.; Fortney, J.; et al., incl. **Mayne, N. J.**
- 56 Accepted for Publication in the *Planetary Science Journal*.  
(abridged) TRAPPIST Habitable Atmosphere Intercomparison (THAI) workshop report.  
Faucher, T.; Turbet, M.; Sergeev, D.; **Mayne, N.** et al.
- 55 Accepted for Publication in *Monthly Notices of the Royal Astronomical Society*.  
(abridged) Heat redistribution Through H<sub>2</sub> Thermal Dissociation/Recombination...for Ultra-Hot Jupiters.  
**Roth, A.**; **Drummond, B.**; Hébrard, E.; Tremblin, P.; **Goyal, J.**; **Mayne, N.**
- 54 Accepted for Publication in *Monthly Notices of the Royal Astronomical Society*.  
(abridged) Clouds in hot and ultra-hot jupiter atmospheres.  
Helling, CH.; Lewis, D.; Samra, D.; Carone, L.; Graham, et al., incl. **Mayne, N.**
- 53 *Monthly Notices of the Royal Astronomical Society*, Volume 502, Issue 4, pp.6201-6215 (2021).  
(abridged) Modelling the influence of stellar XUV-flux and cosmic rays on...HD 189733b.  
Barth, P.; Helling, CH.; Stücken, E.; Bourrier, V.; **Lines, S.**; **Mayne, N.**; Rimmer, P. B.; et al.
- 52 *Journal of Advances in Modeling Earth Systems*, Volume 12, 8. (2020).  
(abridged) Continuous Structural Parameterisations.  
Lambert, H. F.; Challenor, P. G.; Lewis, N. T.; McNeill, D. J.; Owen, D.; et al., incl. **Mayne, N.**
- 51 *Monthly Notices of the Royal Astronomical Society*, Volume 497, Issue 4, pp.5155-5170 (2020).  
A featureless optical transmission spectrum...for the ultra-hot Jupiter WASP-103b

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<sup>4</sup>First author or where supervised student/postdoc is first author

- Wilson, J.; Gibson, N.; Nikolov, N.; Constantinou, S.; Goyal, J.; Barstow, J.; et al., incl. **Mayne, N.**
- 50 Monthly Notices of the Royal Astronomical Society, Volume 498, Issue 4, pp.4680-4704. (2020)  
A Library of Self-consistent Simulated Exoplanet Atmospheres.  
**Goyal, J.; Mayne, N.; Drummond, B.;** Sing, D. K.; Hébrard, E.; Lewis, N.; Tremblin, P. et al.
- 49 Astronomy & Astrophysics, Volume 639, id.A99, 12 pp. (2020).  
Implications of Stellar Type on the Climate of Tidally-locked Terrestrial Exoplanets.  
**Eager, J.; Reichelt, D.; Mayne, N.;** Lambert, H. F.; Sergeev, D.; Boutle, I.; et al.
- 48 Monthly Notices of the Royal Astronomical Society, Volume 496, Issue 2, pp.1638–1644. (2020).  
(abridged) Confirmation of water emission in the dayside spectrum of Wasp-121b.  
Mikal-Evans, T.; Sing, D. K.; Kataria, T.; Wakeford, H. R.; **Mayne, N.;** Lewis, N. K.; et al.
- 47 Nature Communications 11, 2731 (2020). (Adapted version: Science Journal for Kids, 07/2020).  
(abridged) Airborne dust increases the habitability of terrestrial exoplanets.  
**Boutle, I. A.;** Joshi, M.; Lambert, F. H.; **Mayne, N.;** **Lyster, D.;** **Manners, J.;** **Ridgway, R.;** et al.
- 46 The Astrophysical Journal, Volume 894, Issue 2, id.84 (2020).  
(abridged) Atmospheric convection plays a key role in the climate of tidally-locked terrestrial exoplanets.  
**Sergeev, D., E.;** Lambert, H. F.; **Mayne, N.;** **Boutle, I.;** **Manners, J. & Kohary, K.**
- 45 Astronomy & Astrophysics, Volume 636, id.A68, 30 pp. (2020).  
(abridged) Implications of 3D chemical transport in hot Jupiter atmospheres.  
**Drummond, B.;** Hébrard, E.; **Mayne, N.;** Venot, O.; **Ridgway, R.;** Changeat, Q.; Tsai, S-M.; et al.
- 44 Geoscientific Model Development, Volume 13, Number 2, P. 707–716 (2020).  
TRAPPIST-1 Habitable Atmosphere Intercomparison (THAI). Part I: Motivations and protocol.  
Fauchez, T.; Turbet, M.; Wolf, E. T.; **Boutle, I.;** Way, M.; Del genio, A. D.; **Mayne, N.;** et al.
- 43 Monthly Notices of the Royal Astronomical Society, Volume 492, Issue 2, P. 1691–1705. (2020).  
Ozone chemistry on tidally locked M dwarf planets.  
Yates, J. S.; Palmer, P. I.; **Manners, J.;** **Boutle, I. A.;** **Kohary, K.;** **Mayne, N.;** L. Abraham.
- 42 Astronomy & Astrophysics, Volume 633, id.A2, 26pp. (2020).  
(abridged) Acceleration of Superrotation in Simulated Hot Jupiter Atmospheres.  
**Debras, F.;** **Mayne, N.;** Baraffe, I.; Jaupart, E.; Mourier, P.; Laibe, G.; Goffrey, T. & Thuburn, J.
- 41 Astronomy & Astrophysics, Volume 632, id.A114, 13 pp. (2019)  
(abridged) Deep Atmospheres of Hot Jupiters: Deep, Hot, Adiabats.  
Sainsbury-Martinez, F.; Wang., P.; Fromang, S.; Tremblin, P.; et al. incl. **Mayne, N.**
- 40 Astronomy & Astrophysics, Volume 631, id.A36, 15 pp. (2019)  
(abridged) Eigenvectors, Circulations and Linear Instabilities for Planetary Science.  
**Debras, F.;** **Mayne, N.;** Baraffe, I.; Goffrey, T. & Thuburn, J.
- 39 Monthly Notices of the Royal Astronomical Society, Volume 488, Issue 1, p.1332-1355 (2019)  
(abridged) 3D radiative-hydrodynamical simulations of a cloudy hot-Jupiter using *EddySed*.  
**Lines, S.;** **Mayne, N.;** **Manners, J.;** **Boutle, I. A.;** **Drummond, B.;** et al.
- 38 Monthly Notices of the Royal Astronomical Society, Volume 486, Issue 1, p.1123-1137 (2019)  
The carbon-to-oxygen ratio: implications for the spectra of hydrogen-dominated exoplanet atmospheres.  
**Drummond, B.;** Carter, A.; Hébrard, E.; **Mayne, N. J.;** Sing, D. K.; Evans, T. M. and **Goyal, J.**
- 37 The Astrophysical Journal, Volume 871, Issue 1, article id. 56, 21 pp. (2019)  
(abridged) The Limits of the Primitive Equations of Dynamics.  
**Mayne, N. J.;** **Drummond, B.;** **F. Debras;** et al.
- 36 Monthly Notices of the Royal Astronomical Society, Volume 482, Issue 4, p.4503–4513 (2019)  
Fully scalable forward model grid of exoplanet transmission spectra.  
**Goyal, J.;** Wakeford, H.; **Mayne, N.;** Lewis, N.; **Drummond, B.;** Sing, D.
- 35 The Astrophysical Journal, Volume 869, Issue 1, article id. 28, 17 pp. (2018)  
(abridged) 3D thermal, dynamical and chemical structure of the atmosphere of HD 189733b.  
**Drummond, B.;** **Mayne, N. J.;** **Manners, J.;** Baraffe, I.; **Goyal, J.;** Tremblin, P.; et al.
- 34 Publications of the Astronomical Society of the Pacific, Volume 130, Issue 993, pp. 114402 (2018)  
The Transiting Exoplanet Community Early Release Science Program for JWST  
Bean, Jacob.; Stevenson, Kevin B.; Batalha, Natalie M.; et al. incl. **Mayne, Nathan.**
- 33 Monthly Notices of the Royal Astronomical Society, Volume 481, Issue 1, p.194–205 (2018)  
(abridged) Exonephology: a transmission spectrum of a simulated cloudy HD 209458b.

- Lines, S.; Manners, J.; Mayne, N. J.; Goyal, J.;** Carter, A.; **Boutle, I.;** Lee, G.; et al.
- 32 *Astronomy & Astrophysics*, Volume 615, id.A97, 27 pp. (2018)  
Simulating the cloudy atmospheres of HD 209458b and HD 189733b with the 3D Met Office GCM.  
**Lines, S.; Mayne, N. J.; Boutle, I. A.; Manners, J.;** Lee, G.; et al. incl. **Kerslake, M.**
- 31 *Nature*, Volume 557, Issue 7706, p.526–529 (2018)  
An absolute sodium abundance for a cloud-free ‘hot-Saturn’ exoplanet.  
Nikolov, N.; Sing, D.; Fortney, J.; **Goyal, J.; Drummond, B.;** Evans, T.; et al. incl. **Mayne, N. J.**
- 30 *Astronomy & Astrophysics*, Volume 612, id.A105, 17 pp. (2018)  
(abridged) The effect of metallicity on the atmospheres of exoplanets.  
**Drummond, B.; Mayne, N. J.;** Baraffe, I.; Tremblin, P.; **Manners, J.; Amundsen, D. S.;** et al.
- 29 *The Astrophysical Journal Letters*, Volume 855, Issue 2, article id. L31, 9 pp. (2018)  
(abridged) Signatures of wind-driven chemistry with a fully consistent 3D model of HD209458b.  
**Drummond, B.; Mayne, N. J.; Manners, J.;** Carter, A. L.; **Boutle, I.;** Baraffe, I.; Hébrard, E.; et al.
- 28 *The Astrophysical Journal*, Volume 854, Issue 2, article id. 171, 15 pp. (2018)  
The influence of a sub-stellar continent on the climate of a tidally-locked exoplanet.  
**Lewis, N. T.;** Lambert, F. H.; **Boutle, I. A.;** **Mayne, N. J.;** **Manners, J.;** Acreman, D. M.
- 27 *Monthly Notices of the Royal Astronomical Society*, Volume 474, Issue 4, p.5158-5185 (2018)  
Erratum: *Monthly Notices of the Royal Astronomical Society*, Volume 486, Issue 1, p.783-795 (2019)  
A library of ATMO forward model transmission spectra for hot Jupiter exoplanets.  
**Goyal, J. M.; Mayne, N. J.;** Sing, D.; **Drummond, B.;** Tremblin, P.; **Amundsen, D. S.;** et al.
- 26 *The Astrophysical Journal*, Volume 841, Issue 1, article id. 30, 8 pp. (2017)  
(abridged) Advection of potential temperature in the atmosphere of irradiated exoplanets.  
P. Tremblin.; G. Chabrier.; **N. J. Mayne.;** **Amundsen, D. S.;** I. Baraffe.; **F. Debras.;** et al.
- 25 *Astronomy & Astrophysics*, Volume 604, id.A79, 27 pp. (2017)  
Results from a set of three-dimensional numerical experiments of a hot Jupiter atmosphere.  
**N. J. Mayne;** **F. Debras;** I. Baraffe; John Thuburn; **David S. Amundsen;** et al.
- 24 *Astronomy & Astrophysics*, Volume 601, id.A120, 13 pp. (2017)  
Exploring the climate of Proxima Centauri B with the Met Office Unified Model. (Corrigendum)  
**I. A. Boutle.;** **Nathan J. Mayne;** **Benjamin Drummond;** **James Manners;** et al.
- 23 *Astronomy & Astrophysics*, Volume 598, id.A97, 10 pp. (2017)  
(abridged) Treatment of overlapping gaseous absorption with the correlated-k method.  
**Amundsen, D. S.;** Pascal Tremblin.; **James Manners.;** Isabelle Baraffe.; & **N. J. Mayne.**
- 22 *Astronomy & Astrophysics*, Volume 595, id.A36, 11 pp. (2016)  
(abridged) UK Met Office GCM with a sophisticated radiation scheme applied to HD 209458b  
**Amundsen, D. S.;** **N. J. Mayne.;** Isabelle Baraffe.; **James Manners.;** Pascal Tremblin.; et al.
- 21 *Astronomy & Astrophysics*, Volume 594, id.A69, 15 pp. (2016)  
(abridged) Effects of Consistent Chemical Kinetics on PT profiles & Emission of Hot Jupiters  
**B. Drummond.;** P. Tremblin.; I. Baraffe.; **D. S. Amundsen.;** **N. J. Mayne.;** et al.
- 20 *Monthly Notices of the Royal Astronomical Society*, Volume 460, Issue 1, p.855-883 (2016)  
The mineral clouds on HD 209458b and HD 189733b.  
Helling, CH.; Lee, G.; Dobbs-Dixon, I.; **Mayne N.;** **Amundsen, D. S.;** Khaimova, J.; et al.
- 19 *Monthly Notices of the Royal Astronomical Society*, Volume 445, Issue 4, p.3496-3511 (2014)  
Pre-main-sequence isochrones – III. The Cluster Collaboration isochrone server.  
Bell, Cameron P. M.; Rees, Jon M.; Naylor, Tim; **Mayne, N. J.;** et al.
- 18 *Geoscientific Model Development*, Volume 7, Issue 6, 2014, pp.3059-3087 (2014)  
Using the UM dynamical cores to reproduce idealised 3-D flows.  
**Mayne, N. J.;** Baraffe, I.; Acreman, D. M.; **Smith, C.;** Wood, N.; **Skålid Amundsen;** et al.
- 17 *Astronomy & Astrophysics*, Volume 564, id.A59, 16 pp. (2014)  
Accuracy tests of radiation schemes used in hot Jupiter global circulation models.  
**Amundsen, David S.;** Baraffe, I.; Tremblin, P.; **Manners, J.;** Hayek, W; **Mayne, N. J.;** et al.
- 16 *Astronomy & Astrophysics*, Volume 561, id.A1, 24 pp. (2014)  
(abridged) The unified model, applied to hot Jupiters. ENDGame for a HD 209458b test case.  
**Mayne, Nathan J.;** Baraffe, Isabelle; Acreman, David M.; **Smith, Chris;** et al.
- 15 *Monthly Notices of the Royal Astronomical Society*, Volume 434, Issue 3, p.2438-2450 (2013)

A lithium depletion boundary age of 22 Myr for NGC 1960.

Jeffries, R. D.; Naylor, Tim; **Mayne, N. J.**; Bell, Cameron P. M.; Littlefair, S. P.

- 14 Monthly Notices of the Royal Astronomical Society, Volume 434, Issue 2, p.966-977 (2013)  
No evidence for intense, cold accretion on to YSOs from measurements of Li in T-Tauri stars.  
**Sergison, Darryl J.**; **Mayne, N. J.**; Naylor, Tim; Jeffries, R. D.; Bell, Cameron P. M.
- 13 Monthly Notices of the Royal Astronomical Society, Volume 434, Issue 1, p.806-831 (2013)  
Pre-main-sequence isochrones - II. Revising star and planet formation time-scales.  
Bell, Cameron P. M.; Naylor, Tim; **Mayne, N. J.**; Jeffries, R. D.; Littlefair, S. P.
- 12 Monthly Notices of the Royal Astronomical Society, Volume 424, Issue 4, pp. 3178-3191 (2012)  
Pre-main-sequence isochrones - I. The Pleiades benchmark.  
Bell, Cameron P. M.; Naylor, Tim; **Mayne, N. J.**; Jeffries, R. D.; Littlefair, S. P.
- 11 The Astrophysical Journal, Volume 755, Issue 2, article id. 97, 20 pp. (2012)  
(abridged) Can We Predict Global Magnetic Topology of PMS Star from HR Diagram?  
Gregory, S. G.; Donati, J.-F.; Morin, J.; Hussain, G. A. J.; **Mayne, N. J.**; et al.
- 10 Monthly Notices of the Royal Astronomical Society, Volume 423, Issue 2, pp. 1775-1804 (2012)  
Bayesian fitting of Taurus brown dwarf spectral energy distributions.  
**Mayne, N. J.**; Harries, Tim J.; Rowe, John; Acreman, David M.
- 9 Monthly Notices of the Royal Astronomical Society, Volume 418, Issue 3, pp. 1948-1958 (2011)  
No wide spread of stellar ages in the Orion Nebula Cluster.  
Jeffries, R. D.; Littlefair, S. P.; Naylor, Tim; **Mayne, N. J.**
- 8 Monthly Notices of the Royal Astronomical Society: Letters, Volume 413, Issue 1, pp. L56-L60 (2011)  
Accretion-induced luminosity spreads in young clusters: evidence from stellar rotation.  
Littlefair, S. P.; Naylor, Tim; **Mayne, N. J.**; Saunders, Eric; Jeffries, R. D.
- 7 Monthly Notices of the Royal Astronomical Society, Volume 409, Issue 4, pp. 1307-1329 (2010)  
On the properties of discs around accreting brown dwarfs.  
**Mayne, Nathan J.**; Harries, Tim J.
- 6 Monthly Notices of the Royal Astronomical Society, Volume 408, Issue 3, pp. 1409-1416 (2010)  
Observational indicators of the transition from fully convective stars to stars with radiative cores.  
**Mayne, N. J.**
- 5 Monthly Notices of the Royal Astronomical Society, Volume 403, Issue 2, pp. 545-557 (2010)  
Rotation of young stars in Cepheus OB3b.  
Littlefair, S. P.; Naylor, Tim; **Mayne, N. J.**; Saunders, Eric S.; Jeffries, R. D.
- 4 Monthly Notices of the Royal Astronomical Society, Volume 397, Issue 1, pp. 405-410 (2009)  
Pre-main-sequence variability across the radiative-convective gap.  
**Saunders, Eric S.**; Naylor, Tim; **Mayne, Nathan**; Littlefair, S. P.
- 3 Monthly Notices of the Royal Astronomical Society, Volume 386, Issue 1, pp. 261-277 (2008)  
Fitting the young main sequence; distances, ages and age spreads.  
**Mayne, N. J.**; Naylor, Tim.
- 2 Monthly Notices of the Royal Astronomical Society, Volume 376, Issue 2, pp. 580-598 (2007)  
The Keele-Exeter young cluster survey - I. Low-mass pre-main-sequence stars in NGC 2169.  
Jeffries, R. D.; Oliveira, J. M.; Naylor, Tim; **Mayne, N. J.**; Littlefair, S. P.
- 1 Monthly Notices of the Royal Astronomical Society, Volume 375, Issue 4, pp. 1220-1240 (2007)  
Empirical Isochrones and relative ages for young stars and the radiative-convective gap.  
**Mayne, N. J.**; Naylor, Tim; Littlefair, S. P.; Saunders, Eric S.; Jeffries, R. D.

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**Unrefereed Publications e.g., ‘white papers’ (reverse date ordered)**

- 1 White paper for ESA Voyage 2050 (2019)  
Detecting life outside our solar system with a large high-contrast-imaging mission.  
Snellen, I.; et al., incl. **Mayne, N. J.**
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## Impact and Knowledge Exchange

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I am a lead author of an Impact Case Study (ICS), which is an absolutely critical component of the UK Research Excellence Framework (REF) process<sup>5</sup>, and also contributed to the University of Exeter's Knowledge Exchange Framework (KEF) submission. I have an exceptional track record of public engagement, and lead a key collaboration with the Met Office.

### Primary Activity

- **Lead author of Research Excellence Framework (REF) 2021 Impact Case Study (ICS)**
- **Contributor to the University of Exeter Knowledge Exchange Framework (KEF) submission**
- Leading Exoplanet Explorer Engagement Project: <http://emps.exeter.ac.uk/exoplanetexplorers/>
- Created Exoplanet Teaching Resources: <https://fluxphysics.github.io/exoplanets/> (with Prof. J. Dillon.)
- Created Exoplanet Mini-documentary (360°): <https://youtu.be/qhLExhpXXOE>
  - YouTube Metrics: 13+ millions views, 5 000+ comments
  - **Winner of: Bronze and People's choice Awards, Lovie Awards, 2018**
  - Adopted by Partners e.g., S[cube], <http://immobilitymagd.wpengine.com/imagining/>
  - Presentation on Project at Future Sync (<https://futuresync.co.uk>) and Software Cornwall, 2019
- Developed Exoplanet Concept Videos, Physics@Exeter YouTube:  
e.g., <https://www.youtube.com/channel/UCX9eLLawNgedMYtYegsRqeQ>.
- Adaptation of a journal article for children: How can dust make planets more suitable for life? <https://www.nature.com/articles/s41467-020-16543-8> (working with [sciencejournalforkids.org](http://sciencejournalforkids.org))<sup>6</sup>.
- Created Cinematic (360°) Exoplanet Video: <https://www.youtube.com/watch?v=Vnke9dWofR8>
  - **Finalist for a VR Education and Training Award, 2019**

### Misc. Public Engagement

- Events: Thornbury Science Festival, Jun. 2021; Presentation at National Space Centre, Space Late event, Jun. 2021; Great Conjunction Event, including filmed segment, Dec. 2020; Joint event with Garth Wareley (Graffiti artist) for young people in South Africa and India on the Art-Science connection, Dec. 2020; Creative Writing Workshop with Amy Lilwal and Anna Kiernan, Exeter College, Feb. 2020; Presentation at IOP event, 2019; Speech at Excellence Awards for pupils of Cornwall schools, Penryn, 2019; Invitation to induction of artists through University of Exeter Arts and Culture 2019; Joint talk with Engine House VFX at Cornwall Immersive Technology, Event, Bedruthan, 2019; Provision of VR experience for South West Space Innovation Event, 2019; panel member for discussion at 'Greater than I' Panel Exeter Art Week Exeter, 2018; presentation at National Space Centre, Space Late event, 2018; School Physicist of the Year, presentation, 2015, 2017, 2018; Pint of Science presentation, Exeter, 2015, 2018; Britain Needs Scientists, plenary presentation 2015, 2016, 2018; invited talk at National Student Space Conference, University of Exeter 2017; presentation at Eden Project "Journey into Space" exhibition, Cornwall, 2017; presentation at New Scientist Live! event, 2017<sup>7</sup>; presentation at Disney futures workshop, 2015; Britain Needs Scientists, presentation, 2013, 2014; 3-minute wonder competition at Festival of Science, 2013
- Public Presentations: evening lecture, Thomas Hardy School Dorchester, 2016; evening lecture, Camborne Science and International Academy, 2016; 'Stargazing Live!' event, Univ. of Exeter, 2016; Plymouth Astronomical Society, 2016; Penryn Campus, Univ. of Exeter, 2016; Christmas lecture, Devonport High School for boys 2015; Christmas lecture, University of Exeter, 2014; National dark skies reserve, 2013; Cafe Scientifique, Sidmouth, 2012; open evening, international year of astronomy, organisation & overview presentation, University of Exeter, 2010
- Presentations for Schools: Millfield School, 2020; Humphry Davy School, Penzance, 2020; Withycombe Raleigh School, 2019; Pool Academy Exoplanet Session, 2019; Exeter Scholars Programme Lecture, 2019; Physics progression programme lecture, 2018; St Johns International, Sidmouth 2018; NEXUS Camborne Science & International Academy, 2018; Year 7 "Space Day", Exeter College, Exeter 2017; Withycombe Raleigh CoE, Exmouth 2017; Communication Skills Course, 2016; Careers in physics at Truro College, 2014, 2015, 2016; Stoke Hill Junior school, Exeter 2015, 2016; home educated, and behavioural problem group, Redruth, 2014; St Luke's Science week, 2014; Tavistock school visit, 2013, 2014; Exwick Heights, Exeter, 2013; Badminton School, Bristol, 2012; Uffculme School, 2010; International School, Dubai 2009; Yeovil College, 'Meet the Scientist', poster & workshop, 2008

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<sup>5</sup>UK Universities are evaluated through the REF, requiring demonstration of wider impacts of research through ICSs.

<sup>6</sup>This was the first Physical Sciences and Astrophysics article to be adapted in this way.

<sup>7</sup><https://live.newscientist.com/talks> ~30,000 visitors

- Presentations to Societies/Groups: Cornwall Amateur Astronomy Society, Mabe, (virtual) 2020; Exmouth Sea-Cadets, 2018; U3A (University of the Third Age), Exeter, 2017; Kaleider collaborative studio, 2016; Cornwall Amateur Astronomy Society, Mabe, 2015; Norman Lockyer Observatory, Sidmouth 2015; Torbay Astronomical Society, 2015; Senior Physics Society, Charterhouse School, 2014; Astronomy Society, seminar, Tiverton, 2011; Astronomy Society, Callington, 2011; Cornwall Astronomy Society, Penryn, 2011; Brannell Astronomy Society, Callington, 2010
- Miscellaneous: Exeter Scholars Virtual Residential, 2020; Interview Training (Julian Shreeve), 2020; Media Training Event, Exeter, 2020; STFC Wonder Meeting, Swindon, 2019; Feature in CICT Winter Newsletter, 2019; Presentation on accessing Physics degrees for Exeter Scholars Students, Jan. 2019; Judge of Ogden Trust Science Essay Competition, Falmouth, Jul. 2017; Part of team which set up, and contributes to “Physics at Exeter” youtube channel, 2016; Short Concept Videos for Astrophysics outreach; Story on nomination of video for Lovie Award

## Education

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I have contributed to several undergraduate modules, supervised a large number of undergraduate projects, been nominated for two teaching awards, and lead the core Physics module Waves and Optics, receiving outstanding feedback in the most recent, official feedback exercise.

- Fellow of the Higher Education Academy (F-HEA), 2017
- PCAP (Postgraduate Certificate in Academic Practice), 2017
- **Nominated for Univ. Exeter Teaching Award, 2010 & 2019**

### Undergraduate Teaching

|   |              |
|---|--------------|
| Module Lead: Waves and Optics (PHY1023)                               | 2020–Present |
| Student Feedback Scores (Univ. Exeter Accelerate Survey, April 2021): |              |
| <b>Average (15 questions total): 4.5/5.0</b>                          |              |
| <b>Overall learning experience: 4.7/5.0</b>                           |              |
| <b>Online resources: 4.9/5.0</b>                                      |              |
| Undergraduate Project Supervision (e.g., MPhys, NatSci)               | 2011–Present |
| Module Consultant: Mathematics with Physical Applications (PHY2025)   | 2020–2021    |
| Tutorial (3 <sup>rd</sup> year):                                      | 2015–2016    |
| 4 groups (1 hr/week each), 20 students (Bsc & Mphys)                  |              |
| General Problem Class:  | 2011         |
| Delivery of lectures, coordination of assessment & marking            |              |
| Astrophysics Practical Module (2 <sup>nd</sup> year):                 | 2008         |
| Preparation of course content & assessments and marking & delivery    |              |
| C-programming Module:   | 2008         |
| Preparation of course content & assessments, and marking & delivery   |              |
| Astrophysics Practical Module (1 <sup>st</sup> year):                 | 2007         |
| Marking & delivery  |              |
| Physics Practical Module:   | 2005–2011    |
| Preparation of lab experiments & assessments, and marking & delivery  |              |
| Communication Skills Course (1 <sup>st</sup> year)                    | 2004–2016    |
| Overall organisation & lecture delivery                               |              |
| Pre-University Physics Course (pre-entry)                             | 2004–2016    |
| Overall organisation & lecture delivery                               |              |

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- Current UG Supervision (4): Isabelle Browne, Huw Davies, Rosie Gillard & Oakley Young (MPhys, 2020-2022)
  - Completed UG Project Supervision (20): Danny McCulloch, internship (Bsc Zoology, 2019–2020); Joshua Parkin & Esse Selwood (with Jake Eager & Denis Sergeev), internship (2020); Jake Eager & David Reichalt<sup>†</sup> (2017–2019); Scott Larcombe, Harry McCrea, Duncan Lyster<sup>†</sup> & Calum Smith (co-supervisor: Dr S. Lines, MPhys, 2016–2018); Stephanie O’Neill & Daniel Gymer (co-supervisor: Dr F. H. Lambert, Bsc: Nat Sci, 2017–2018); Liam Crossling & Dan Barlow (co-supervisor: Dr F. H. Lambert, MSci: Nat Sci, 2016–2017); Nestor Arsenov (co-supervisor: Dr E. Hébrard, summer project, 2017); Max Kerslake<sup>†</sup> (co-supervisor: Dr S. Lines, summer project, 2017); Neil Lewis<sup>†\*</sup> (co-supervisor: Dr F. H. Lambert, summer project, 2016, 2017); Matthew Read & Lewis Ireland<sup>\*\*</sup> (summer project, 2013); Tom Wilson & Sam Horaib (co-supervisor: Prof. T. Naylor, MPhys, 2011–2013)

<sup>†</sup> Article published in refereed journal \* & \*\* Article published in JUST (<http://emps.exeter.ac.uk/just/>)



## Postgraduate Research

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I currently lead a large research team, the Exeter Exoplanet Theory Group (EETG), and have previously been involved in the supervision of 8 PhD students, supporting several through to permanent research positions.

### PhD Examination

- Mark Hammond (supervisor: Prof. R. Pierrehumbert), Univ. Oxford, 2019
- Adam Finley (internal, supervisor: Prof. S. Matt), Univ. Exeter, 2020
- Taylor Bell (supervisor: Prof. N. Cowan), McGill Space Institute, 2021
- Anjali Piette (supervisor: Prof. Nikku Madhusudhan), Cambridge University, 2021

### Postdoctoral Supervision (8)

|                     |   |                     |
|---------------------|---|---------------------|
| Dr Stefan Lines     | Met Office Secondment (10%)   | May. 2021–Oct. 2023 |
| Dr Mark Hammond     | Exoplanet Polar Vortices (Univ. Bristol)<br>co-supervisors: Prof. D. Mitchell (Univ. Bristol), Dr. W. Seviour | Apr. 2021–Oct. 2021 |
| Dr Krisztian Kohary | UM & LFRic Support 0.3FTE   | Feb. 2021–Feb. 2025 |
| Dr Lokesh Ragta     | DIRAC RSE 0.5FTE  | Jan. 2021–Jan. 2021 |
| Dr Arwen Nicholson  | EXOGAIA: Life–climate interaction<br>co-supervisors: Prof. T. Lenton, Dr. J. Manners                          | Nov. 2020–Nov. 2023 |
| Dr Duncan Christie  | Clouds: exoplanet modelling   | Sep. 2019–Apr. 2022 |
| Dr Maria Zamyatina  | Chemistry: exoplanet modelling<br>co-supervisor: Dr. E. Hébrard   | Sep. 2019–Apr. 2025 |
| Dr Denis Sergeev    | Convection: exoplanet modelling<br>co-supervisor: Dr. F. H. Lambert   | Sep. 2018–Sep. 2021 |

### PhD Supervision (6)

|                    |  |                     |
|--------------------|--|---------------------|
| Mei Ting Mak       | PhD: exoplanet modelling<br>co-supervisor: To Be Confirmed   | Sep. 2021–Sep. 2025 |
| Michelle Biegar    | PhD: exoplanet modelling<br>co-supervisor: Dr. E Hébrard   | Sep. 2019–Jan. 2024 |
| Jake Eager         | PhD: exoplanet modelling<br>co-supervisor: Prof. T. Lenton, Dr. E Hébrard<br>Prof. A. Watson, Dr. H. Lambert | Sep. 2019–Sep. 2023 |
| Robbie Ridgway     | PhD: exoplanet modelling<br>co-supervisor: Dr. H. Lambert  | Sep. 2018–Dec. 2022 |
| Simon Lance        | PhD: stellar and exoplanet modelling<br>co-supervisor: Prof. M. Browning                                     | Sep. 2018–Jan. 2023 |
| Guang “Menk” Huang | PhD: Atmospheric Chemistry<br>co-supervisor: Prof. T. Lenton   | Sep. 2019–Sep. 2021 |

### Postgraduate Masters Supervision (3)

|                  |  |                     |
|------------------|--|---------------------|
| Danny McCulloch  | MSci by Research: Martian Climate<br>co-supervisor: Prof. M. Bate                  | Sep. 2020–Sep. 2022 |
| Meghan Plumridge | MSci by Research: Martian Climate<br>co-supervisors: Prof. M. Bate & Dr D. Sergeev | Apr. 2021–Apr. 2025 |
| Janke Prins      | Masters in Science Communication<br>co-supervisor: Prof. I. Kamp (Univ. Groningen) | Sep. 2021–Mar. 2022 |

- Completed Postdoctoral & Secondments (6): Dr. James Manners (Met Office Secondment, 2013–2019, moved to joint position at Univ. Exeter, 20% & Met Office, 80%); Dr. Ben Drummond (STFC, 2017–2019, co-supervisor: Dr. E. Hébrard, moved to Met Office **permanent**); Dr. Stefan Lines (Leverhulme & STFC, 2016–2019, moved to Met Office **permanent**); Dr. Ian Boutle (Met Office Secondment, 2016–2019); Dr. Paul Cresswell (Met Office Secondment, 2016–2017); Dr. Chris Smith (Met Office Secondment, 2013–2015)
- Graduated PhD (8): Dr. M. Phillips (co-supervisor: Prof. I. Baraffe, moved to IfA), Dr. J. Goyal (co-supervisor: Prof. D. Sing, moved to postdoc Cornell, NISER, India **permanent**), Dr. J. Spake (co-supervisor: Prof. D. Sing, moved to Caltech–51 Peg fellowship); Dr. Florian Debras (co-supervisor: Prof. G. Chabrier, moved to postdoc Univ. Toulouse, 2016–2019, CNRS 2020 **permanent**); Dr. Ben Drummond (co-supervisor: Prof. I. Baraffe, moved to postdoc: Univ. Exeter, 2013–2017); Dr. Darryl Sergison (co-supervisor: Prof. T. Naylor, 2013–2016); Dr. David S. Amundsen (co-supervisor: Prof. I. Baraffe, moved to postdoc: Columbia Univ., 2012–2015); Dr. Cameron Bell (co-supervisor: Prof. T. Naylor, moved to postdoc: ETH, Zurich, 2009–2012)

- Graduated MSc (1): Charlie Sweetland (MSc: Advanced Mathematics, 2015)
- Sponsorship of Honorary Positions (7): Stefan Lines (Met Office, MO); Benjamin Drummond (MO); Robert Sullivan (Ministry Of Defence, MOD); Ian Boutle (MO); James Manners (MO); Chris Smith (MO); Florian Debras (Univ. Lyon).

**Note:** all PhD students are supervised by at least two academics at the University of Exeter.

## Leadership and Management

I have demonstrated a sustained contribution to leadership and management at the University of Exeter, through roles such as Admissions Tutor and Assistant Director of Education, to significant contributions to our successful Athena Swan Bronze and Silver and Institute of Physics Juno Champion submissions. I have received several awards, led negotiations for a University site licence for Met Office software and am a member of several boards, strategy and advisory groups.

- **Leadership Difference Course:** Currently Attending, 2021
- **CEMPs Academic Recognition Awards:** “Dean’s Outstanding Contribution Award”, 2019
- **CEMPs Academic Recognition Awards:** “Diversity and Outreach” (shortlisted), 2019
- **Institute of Physics Juno:** Juno Champion Status Physics & Astronomy (co-author), 2018
- **Athena Swan:** Silver Award Physics & Astronomy (co-author), 2018
- **Met Office Site Licence:** lead for Univ. Exeter wide software licence (use & development), 2018–2022
- **Above & Beyond Award,** 2017 & 2020
- **Athena Swan:** Bronze Award Physics & Astronomy (co-author), 2015

## Roles & Responsibilities

|   |                     |
|---|---------------------|
| Mentor: Wowbagger Productions Mentoring Scheme  | 2021                |
| Member of the Extreme Environments Institute ‘task group’   | Sep. 2019–present   |
| Research–IT Service Owner’s Board   | Feb. 2020–present   |
| Creative Industries Strategy Group  | Feb. 2020–present   |
| Public Engagement Strategic Advisory Group (PEG)  | Feb. 2020–present   |
| Contributed to Knowledge Exchange Framework (KEF) submission  | 2020–2021           |
| REF2020 Writing Retreat (contributing to REF document preparation)  | 2020                |
| Global Systems Institute, Academic Working Group (deputy for Prof. I. Baraffe)  | Jan. 2018–2020      |
| Member of Centre for Intermedia and Creative Technology Network, Univ. Exeter   | Jan. 2018–present   |
| Admissions Tutor, Physics & Astronomy, Univ. of Exeter  | Sep. 2016–2019      |
| Overseeing entire undergraduate admissions process: applications, interviews & offers.                                  |                     |
| <b>Implemented cut at AAB+, returned highest tariff entrant cohort, 2016/2017</b>                                       |                     |
| <b>Returned highest ever discipline interview success rate, 2017/2018</b>   |                     |
| Stage One Coordinator, Physics & Astronomy, Univ. of Exeter   | Sep. 2016–2018      |
| Chairing module planning & review meetings, overseeing all 1 <sup>st</sup> year students (attendance, performance etc.) |                     |
| Assistant Director of Education, Physics & Astronomy, Univ. of Exeter   | Sep. 2016–2018      |
| Staff–Student Liaison Committee, Education Committee & Accreditation Committee (IOP)                                    |                     |
| Inclusivity Strategy/Writing Group, Physics & Astronomy, Univ. of Exeter  | Sep. 2013–2019      |
| Inclusivity Working Groups, Physics & Astronomy, Univ. of Exeter  | Sep. 2012–2019      |
| Postdoctoral Secondary Facilitator, CEMPS, Univ. of Exeter  | Sep. 2010–Apr. 2014 |

## Initiatives & Contributions

|   |                      |
|---|----------------------|
| Physics@Exeter Lecture, Univ. Exeter                                | Feb. 2020            |
| UCAS Open Day Sample Lecture, Univ. of Exeter                       | Jun. 2016            |
| Pre-University Physics Course Sample Lecture, Univ. of Exeter       | Jul. 2015, Jul. 2016 |
| Athena Swan: Engagement & Awareness day, Univ. of Exeter            | Mar. 2015, 2016      |
| Institute of Physics Unconscious Bias Workshop, Loughborough Univ.  | 2015                 |
| Promotion Workshops Series (organiser & presenter), Univ. of Exeter | 2014–2017            |
| UCAS Open Day, Physics & Astronomy, Univ. of Exeter                 | 2014–present         |
| Interaction & discussion sessions                                   |                      |
| UCAS Admissions, Physics & Astronomy, Univ. of Exeter               | 2014–present         |
| Interviews, presentations & discussions sessions                    |                      |
| Natural Sciences Offer-Holder visit day, Univ. of Exeter            | 2014                 |
| Presentation and discussion sessions                                |                      |
| Research Interactive (undergraduates), CEMPS, Univ. of Exeter       | 2013                 |

|   |                  |
|---|------------------|
| Research Showcase (under- & post-graduates), CEMPS, Univ. of Exeter | 2013, 2014, 2015 |
| Research Speed-Updating (staff), Univ. of Exeter                    | 2013             |
| UCAS general, Physics & Astronomy, Univ. of Exeter                  | 1997–present     |
| Tours, hosting and external visits                                  |                  |

## External Recognition

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I am recognised, internationally, as a leader in the field of exoplanet research. I have been invited to deliver presentations at major conferences and institutes, regularly engaged with the media including involvement in national and international programmes, and served the community extensively through review processes. I have been involved in the organisation of a large number of highly successful and important scientific meetings, and, in particular, have played a leading role in the delivery of the UK Exoplanet Community Meeting for many years.

### Invited Talks: Conferences

|           |  |
|-----------|--|
| Pending   | “Exoclines Summer School”, Univ. Bern (postponed from 2020, COVID–19)                                    |
| Sep. 2020 | THAI Workshop, Online workshop (virtual: COVID–19)   |
| Jan. 2020 | “On Stars and Planets”, Center for Space Science, New York University, Abu Dhabi                         |
| Oct. 2019 | Extreme Environments Think Tank, Penryn Campus, Univ. Exeter   |
| Jul. 2019 | Lovelock Centenary: The Future of Global Systems Thinking, Univ. Exeter                                  |
| Jun. 2019 | Star Planet 2019, Ringberg (MPIA) Germany  |
| Apr. 2019 | Dynamics of Rotating Fluids: ‘Dynamics of giant planets’, Univ. Exeter                                   |
| Jan. 2019 | Digital Exoplanets, MOLIM/COST Workshop, Charles University, Prague                                      |
| Jul. 2018 | Spectroscopy of Exoplanets, Cumberland Lodge (University College London)                                 |
| Feb. 2018 | <b>Plenary:</b> Met Office Academic Partnership Poster & Presentation Event, Met Office                  |
| Jan. 2018 | Dynamics of Rotating Fluids: ‘Dynamics of giant planets’<br>University College London                    |
| Jun. 2017 | Planetary atmospheres: on Earth, in the solar system, and on exoplanets<br>Wenner-Gren Center, Stockholm |
| May. 2017 | Climate science, atmospheres and life: from the Earth and beyond<br>University of Cambridge              |
| Apr. 2017 | Atmospheres of Disks and Planets 2017: Chemistry, Dynamics and Observations<br>Ringberg (MPIA), Germany  |
| Jul. 2016 | <b>Plenary:</b> “CliMathNet” International Conference, University of Exeter                              |

### Invited Talks: Seminars

|           |  |
|-----------|--|
| Pending   | Department of Astrophysics, University of Vienna (postponed: COVID–19)                             |
| May. 2021 | Kavli institute for astrophysics and space research, MIT (virtual: COVID–19)                       |
| May. 2021 | Astrophysics, space research & stellar physics, Univ. of Birmingham (virtual: COVID–19)            |
| Apr. 2021 | Astro-APEX (Astrobiology and Planetary Exploration), University College London (virtual: COVID–19) |
| Mar. 2021 | University of Geneva (virtual: COVID–19)   |
| Oct. 2020 | Institut d’Astrophysique de Paris (virtual: COVID–19)  |
| Apr. 2020 | Department of Astrophysics, University of Vienna (pre-recorded: COVID–19)                          |
| Feb. 2020 | BRIDGE Seminar Series, University of Bristol   |
| Dec. 2019 | Centre for Space and Habitability, University of Bern  |
| Oct. 2019 | Department of Physics & Astronomy, University of Sheffield   |
| May. 2019 | Atmospheric, Oceanic and Planetary Physics, Oxford University                                      |
| May. 2018 | Astronomy & Astrophysics Group, University of Warwick  |
| Apr. 2018 | Fluids & MHD seminars, University of Leeds   |
| Oct. 2016 | Astrophysics Research Institute, Liverpool John Moores University                                  |
| Jun. 2016 | Department of Physics and Astronomy, University of Leicester                                       |
| May. 2016 | Centre for Atmospheric Science, University of Cambridge  |
| Dec. 2015 | Met Office, Exeter (Delivered by PhD student Ben Drummond)   |
| Oct. 2015 | Institute for Astronomy, The University of Edinburgh, Royal Observatory                            |
| Feb. 2015 | Atmospheric, Oceanic and Planetary Physics, Oxford University                                      |
| Dec. 2014 | Planetary Science, Department, Caltech   |
| Dec. 2014 | Institute for Planets and Exoplanets, UCLA   |
| Dec. 2014 | LCOGT, Santa Barbara   |
| Dec. 2014 | Department of Astronomy and Astrophysics, UC Santa Cruz  |
| Dec. 2014 | NASA Ames  |
| Nov. 2014 | Lunar and Planetary Lab, University of Arizona   |
| May. 2014 | School of Physics and Astronomy, University of St. Andrews   |
| May. 2014 | Geophysical and Astrophysical Fluids Department, University of Exeter                              |
| Jun. 2012 | Applied Mathematics Department, University of Exeter   |
| Jul. 2012 | Met Office, Exeter   |

Aug. 2009 (star formation) Astrophysics Group, University of Keele

## Contributed Talks

Nov. 2020 Future Leaders: Two O'clock Talks (virtual: COVID-19)  
Jul. 2018 "OWL: ESP programme", UCSC  
Apr. 2016 "Exoplanet UK community meeting", Univ. of Exeter  
Mar. 2015 "Met Office/Univ. of Exeter Space Weather day", Univ. of Exeter  
Apr. 2014 "Exoplanet UK community meeting", Cambridge Univ.  
Feb. 2014 "Exoclimates, international conference", Davos Congress Centre  
Sep. 2013 "European Planetary Science Congress", international conference, Univ. College London  
Sep. 2013 "Mind the gap", international conference (invited by organiser), Hertfordshire Univ.  
May. 2013 "Rotational fluid dynamics: planetary & stellar applications", workshop, Univ. of Exeter  
Dec. 2011 "GCM & Exoplanets", workshop, University of Exeter  
Oct. 2010 "Constellation Meeting", international conference (star formation), Tenerife  
Apr. 2008 "National Astronomical Meeting" (star formation), Belfast

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## Media

- TV & Video: BBC Spotlight Feature on Engagement Work, 2019; Promotional video for Centre for Intermedia and Creative Technology (CICT), 2018; TED<sup>x</sup> Truro, presentation Sep. 2016; BBC Breakfast News interview & special comments (partial eclipse), Mar. 2015; Appearance on BBC 'Stargazing Live!' Programme, filmed segment, Jan. 2014
- Featured Articles: UM Newsletter article, Mar. 2020; Story in BBC science Focus Magazine, Aug. 2019; Article in University of Exeter Alumni Magazine, Mar. 2018; Story in CICT Newsletter, Apr. 2018; Article for "The Conversation", Oct. 2016
- Interviews & Press Releases: BBC Radio Devon, Soundtrack of the Southwest, 2020; BBC Radio Devon Interview (UKRI FLF award), 2020; Press release on UKRI Future Leaders Fellowship, 2020; Combined UoE, UEA and UKRI STFC Press release on Nature Communications article featured in, for example, the Daily Mail, Science Daily, the Independent, ITV, and Sci Show, 2020; BBC Radio Devon Interview, 2020; Press Release on Schools Engagement Session at Pool Academy, 2019; Press Release on Virtual Reality Video reaching 1 Million views, Apr. 2018; Interview on 'Pint of Science' talk, BBC Radio Devon on, May. 2018; Press Release on Nature publication, May. 2018; Produced Animations with Engine House and At-Bristol for joint NASA & University of Exeter press release. Featured in e.g., Express, Verge, Sci News, Daily Star, IB Times, Telegraph, New Scientist, Science Alert, Science Daily, Sky at Night, Sky and Telescope, IFL Science, Forbes, NBC, Wired, Mirror, Phys Org, Inverse, Physics World, Astronomy Now etc. Aug. 2017; Interviews for WIRED, IFLScience, International Business Times, Financial Times, VICE, BBC World Service & BBC Radio Devon, Jun. 2017; Press Release on "Exoplanet Explorer" animations, Oct. 2017; Press release on research, University of Exeter, May. 2017; Radio Exe interview (Perseid Meteor Shower), Aug. 2015, Aug. 2016; Interviews on Perseid Meteor Shower, Radio Devon & Western Morning News, Aug. 2016; Coordinated NASA/University of Exeter press release on Research publication, Sep. 2016; Interview for "Research Fortnight", Dec. 2016; Interview on searching for life on exoplanets, RadioEXE, Oct. 2016; Interview for Devon Life magazine, 2014; News article, Express and Echo, 2014; Interview on Exoplanet modeling, BBC Radio Devon, 2014, Interview on Exoplanet modeling, BBC Radio Cornwall, 2014; News article, University of Exeter research news, 2014; News article, Met Office research news, 2014; News article, Daily Mail, 2012
- Miscellaneous: British Science Week Tweet, Mar. 2020; Physics@Exeter, 2019; Research image as front cover of Astronomy & Astrophysics Vol 561, Jan. 2014.

## Roles

### Organisation of Scientific Meetings:

- RAS Specialist Discussion Session: "Exoplanet Modelling in the James Webb Era II", London, Oct/Nov. 2021 (virtual: COVID-19)
- Exeter Exoplanet Theory Group Summer Meeting: Penryn, Jul. 2021 (~30 delegates)
- Exeter Space & Extreme Environments: from Space to People, May. 2021, (virtual: COVID-19)
- RAS Specialist Discussion Session: "Exoplanet Modelling in the James Webb Era", London, Jan. 2021 (virtual: COVID-19)
- Discussion Session: "Exoplanet Modelling", UKEXOM, ~30 delegates, St Andrews, Mar. 2017
- Workshop: "Idealised Planetary Modelling", ~30 delegates, Univ. Exeter, Feb. 2016 (sole organiser)
- SOC (Scientific Organising Committee): NExSS CUISINES Workshop (Sep. 2021, virtual: COVID-19), UKEXOM Birmingham (Apr. 2021, virtual: COVID-19), Exoclimates (Oxford, Aug. 2019), UKEXOM (Imperial & UCL Apr. 2019), EWASS symposium (Liverpool, Apr. 2018), UKEXOM (Oxford, Mar. 2018), UKEXOM (Univ. Exeter, Apr. 2016), GCM workshop (Exeter, 2011)

**Service:**

- Member of CUISINES GCM inter-comparison committee
- Member of ARIEL consortium
- Co-Author: DiRAC Exoplanet Science case for Project Board (lead author: R. Alexander)
- REF Focus Group, Dec. 2020
- Panel member for discussion session: “Learning from Exoplanets”, CliMathNet, Jul. 2016
- European Southern Observatory Observing Programmes Committee Panel Co-Chair (P97-C4, P98-C2) 2015/2016 (requested P99-declined)
- Reviewing:
  - Journals: ApJ, MNRAS, PASA, Nature Ast.
  - Funding: Royal Society (URF), Eccellenza Professorial Fellowship: Swiss National Science Foundation (SNSF), NASA (NSPIRES), STFC (Consolidated, Ernest Rutherford Fellowships, Spark, Nucleus, Public Engagement Fellowship), NWO (Vidi), All Souls College Oxford Fellowship, UKRI (Future Leader Peer Review College), Belgian Federal Science Policy Office.
  - Facilities: Hubble Space Telescope (HST), Swiss National Supercomputing Centre (CSCS)

**Professional Memberships:**

Fellow of the Royal Astronomical Society