

# Curriculum Vitae

**Family name, First name:** Mayne, Nathan, **Date of Birth:** 28/12/79

**ORCID:** <https://orcid.org/0000-0001-6707-4563>, **Group URL:** <http://exoclimatology.com/>

**Current Institute:** University of Exeter, College of Engineering, Mathematics and Physical Sciences.

## Academic Career: Summary

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I currently lead a research programme at the forefront of exoplanet research combining state-of-the-art theoretical treatments of both terrestrial and gas giant planets, linked via a *real-time* shared development environment with the internationally leading weather and climate prediction institute the Met Office. My work has been recognised by invitation to present at nine conferences and workshops and deliver 20 seminars. I have solely organised and delivered a ~30 delegate workshop, and sit on the UK Exoplanet Community Meeting & Exoclimates SOCs (the largest UK exoplanet meeting, and one of the largest international exoplanet meetings, respectively). I have been awarded a total of four secondments of staff from the Met Office and resources equivalent to ~£500,000 and over ~£11 Million as PI & Co-I, respectively (gross totals). I have supervised (note: all PhD's have two, or more, supervisors at Univ. Exeter) a total of 10 PhD students (five graduated), and six postdoctoral researchers (two completed). I have published 37 refereed journal articles gathering 1009 citations, with an impact factor of 18. Finally, my work has enhanced interactions between the astrophysics, and Earth science communities at Exeter, and more widely in the UK. I have also contributed important work to other fields, primarily the observational and theoretical understanding of stellar evolution.

I am a Fellow of the Higher Education Academy, and have been nominated for a teaching award. I have constructed and co-delivered an astrophysics laboratory module, computing module and practical lab-based module for final year Physics & Astronomy students. I have also led tutorials for final year undergraduates, and led on various 'skills' based courses. I have supervised 17 undergraduate or masters level research projects (15 completed or graduated) yielding three journal publications. I also oversaw all facets of the student experience in our undergraduate first year, as Stage One Coordinator, incl. developing and reviewing module content for two years. In addition to this, I oversaw the entirety of our admissions process dealing with applications, interviews, offers etc. as Admissions Tutor, for three years. I have also delivered a significant volume and range of 'outreach' or scientific communication material, having led or contributed to over 50 events of various forms, including an immersive, mini-documentary viewed over 3 Million times in 1.5 yrs. I have also been involved in over 30 media productions across various platforms including a TEDx presentation, and Star Gazing Live!

Finally, I sat on the Physics and Astronomy 'inclusivity committee', for over 6 years leading initiatives such as "promotion workshops" for postdoctoral researchers, and co-authoring the submissions from which our department was awarded IOP: Juno Champion status, and Athena Swan Silver status.

## Academic Career: Positions

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Senior Lecturer	Univ. of Exeter	Apr. 2015–Present
Lecturer ( <i>proleptic</i> )	Univ. of Exeter	Jan. 2014–Apr. 2015
Research Fellow ( <i>Supvr:</i> Prof. I. Baraffe)	Univ. of Exeter	Jul. 2011–Jan. 2014
Assoc. Research Fellow ( <i>Supvr:</i> Prof. T. Harries)	Univ. of Exeter	Jul. 2008–Jul. 2011

## Academic Career: Qualifications

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<b>PCAP</b>	Univ. of Exeter	Nov. 2017
Postgraduate Certificate in Academic Practice		
<b>PhD</b>	Univ. of Exeter ( <i>Supvr:</i> Prof. T. Naylor)	Sep. 2004–Jun. 2008
<i>Title: Using colour–magnitude diagrams to study the evolution of young stellar populations</i>		
<b>MPHYS (hons), 1<sup>st</sup> Class</b>	Univ. of Exeter ( <i>Supvr:</i> Prof. W. Barnes)	Sep. 1999–Jun. 2003
<i>Dissertation subject: surface plasmon resonance</i>		
Two Dean's commendations & school prize for outstanding results		
<b>A–Levels</b>	Pool School & Community College	Sep. 1996–Jul. 1998
Mathematics <b>A</b> , Further Mathematics <b>A</b> , Physics <b>A</b> & Chemistry <b>C</b>		

## Research: Funding & Resource Awards

Funded PI Proposals:			Est. Value
2018	<i>Link Impact fund: IIB (Internal)</i>		~£2 000
2018	<i>MIRA3D: Workshop</i>		~£500
2018	<i>Impact fund: STFC consolidated grant</i>		~£28 000
2017	<i>Impact fund: IIB and CEMPS (Internal)</i> “Exoplanet Explorer” (visualisation with At-Bristol & Engine House)		~£21 000
2017	<i>Met Office Academic Partnership (MOAP)</i> , two staff one-day-per-week		~£20 000
2016	<i>QR Small equipment fund (Internal)</i> : Atmospheric Modelling Server		~£6 000
2016	<i>Leverhulme Research Project Grant</i> (I. Baraffe, J. Manners, D. Apai) “Examining cloud induced variability in Brown Dwarfs”		~£250 000
2016	<i>Met Office Academic Partnership (MOAP)</i> , two staff one-day-per-week		~£20 000
2016	<i>MOAP</i> , one staff two-days-per-week (6mths)		~£10 000
2015	<i>MOAP</i> , one staff one-day-per-week		~£10 000
2015	<i>Univ. Exeter PhD Studentship (Internal)</i>		~£80 000
2014	<i>MOAP</i> , two staff one-day-per-week		~£20 000
2013	<i>MOAP</i> , two staff one day per week		~£20 000
2011	<i>William Herschel Telescope (WHT)</i> , multi-fibre spectroscopy		~£51 000
Funded Co-I Proposals:			Est. Value
2018	<i>DiRaC</i> , ~75 million CPU hours	PI: Prof. M. Bate	~£3 000 000
2018	<i>UCSC: OWL Summer Programme</i>	PI: S. Lines	~£6 000
2017	<i>STFC Consolidated Grant</i> <i>Sub project co-I</i> <i>Sub project co-I<sup>1</sup></i> <i>Sub project co-I<sup>2</sup></i>	PI: I. Baraffe PI: H. F. Lambert PI: D. K. Sing PI: E. Hébrard	~£1 800 000 [~£300 000] [~£300 000] [~£300 000]
2017	<i>Spitzer</i> 80 hours phase curve, DDT	PI: Dr. T. Evans	~£1 800 000
2017	<i>International Excellence Scholarship (Internal)</i>	PI: M. Rice ( <b>Declined</b> )	[~£131 000]
2017	<i>DiRaC</i> , ~75 million CPU hours	PI: Prof. M. Bate	~£3 000 000
2016	<i>ESO SPHERE</i> , imaging 11 hrs	PI: E. Matthews	~£35 000
2016	<i>ESO FORS2</i> , <i>Large prog.</i> , spectroscopy ~13 nght	PI: Dr. N. Nikolov	~£400 000
2016	<i>ESO SPHERE</i> , polarisation 1 night	PI: Dr. S. Hinkley	~£30 000
2016	<i>ESO SPHERE</i> , <i>NACO DDT</i> , imaging 8 hrs	PI: Dr. S. Hinkley	~£25 000
2015	<i>ESO SPHERE</i> , imaging 16 hrs	PI: Dr. S. Hinkley	~£50 000
2015	<i>ESO SPHERE</i> , imaging 16 hrs	PI: Dr. S. Hinkley	~£50 000
2015	<i>Terra Hunting Experiment</i> , ( <b>pending</b> )	PI: Prof. D. Queloz	[~£5,000,000]
2015	<i>DiRaC</i> , ~75 million CPU hours	PI: Prof. M. Bate	~£3 000 000
2015	<i>MONSooN</i> , ~320 000 CPU hours/year (rolling)	PI: Prof. P. Palmer	~£14 000
2015	<i>MONSooN</i> , ~160 000 CPU hours/year (rolling)	PI: Dr. J. Manners	~£7 000
2014	<i>ESO SPHERE</i> , imaging 18 hrs	PI: Dr. S. Hinkley	~£55 000
2012	<i>DiRaC</i> , ~26 million CPU hours	PI: Prof. M. Bate	~£1 000 000
2012	<i>Isaac Newton Telescope (INT)</i> , photometry	PI: Prof. T. Naylor	~£25 000
2010	<i>Liverpool Telescope (LT)</i> , photometry	PI: Prof. T. Naylor	~£8 500
2009	<i>Gemini</i> , multi-object spectroscopy	PI: Prof. T. Naylor	~£51 000
2008	<i>WHT</i> , multi-fibre spectroscopy	PI: Prof. T. Harries	~£17 000
2008	<i>WHT</i> , multi-fibre spectroscopy	PI: Prof. T. Naylor	~£51 000
2008	<i>INT</i> , photometry	PI: Prof. T. Naylor	~£30 000
2008	<i>INT</i> , photometry	PI: Prof. T. Naylor	~£5 000
2007	<i>INT</i> , photometry	PI: Prof. T. Naylor	~£30 000
2007	<i>WHT</i> , multi-fibre spectroscopy	PI: Prof. T. Harries	~£17 000
2006	<i>WHT</i> , multi-fibre spectroscopy	PI: Prof. T. Naylor	~£102 000
2005	<i>WHT</i> , multi-fibre spectroscopy	PI: Prof. T. Naylor	~£51 000

(1) PI transferred to N. Mayne, (2) Unlisted Co-I, but contribution vital, & recognised internally.

## Research: Publication Metrics (NASA ADS: *14/01/19*)

Refereed Journal Articles: 37 with 1009 citations.

Primary/Lead author (within REF unit at Univ. Exeter): 21 with 380 citations.

First/Sole Author: 9 with 266 citations.

### h factor: 18

Refereed journal articles published/yr	Notes/Milestones
2007	2
2008	1 ( <i>PhD awarded: 16/06/2008</i> )
2009	1
2010	3
2011	2
2012	3
2013	3 <i>REF2014 Ends</i>
2014	4 <i>REF2021 Starts</i>
2015	- ( <i>Appointed Senior Lecturer</i> )
2016	3 ( <i>Admissions Tutor, Stage 1 Coord. &amp; Ass. Dir. Ed.</i> )
2017	4
2018	9
2019	2 (1 in proof, 1 under review)

## Research: Publications

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

38 Under Review for Publication in MNRAS:

Drummond, B.; Carter, A.; Sing, D. K.; **Mayne, N. J.**; Evans, T. M.; Hébrard, E. and Goyal, J.  
*The carbon-to-oxygen ratio: implications for the spectra of hydrogen-dominated exoplanet atmospheres.*

37 2018arXiv181202451M:

**Mayne, N. J.**; Drummond, B.; F. Debras; et al.  
*(abridged) The Limits of the Primitive Equations of Dynamics.*

36 2019MNRAS.482.4503G:

Goyal, J.; Wakeford, H.; **Mayne, N.**; Lewis, N.; Drummond, B.; Sing, D.  
*Fully scalable forward model grid of exoplanet transmission spectra.*

35 2018ApJ...869...28D: **1 citations**

Drummond, B.; **Mayne, N. J.**; Manners, J.; Baraffe, I.; Goyal, J.; Tremblin, P.; Sing, D. K.; et al.  
*(abridged) 3D thermal, dynamical and chemical structure of the atmosphere of HD 189733b.*

34 2018PASP..130k4402B: **6 citations**

Bean, Jacob.; Stevenson, Kevin B.; Batalha, Natalie M.; et al. incl. **Mayne, Nathan.**  
*The Transiting Exoplanet Community Early Release Science Program for JWST*

33 2018MNRAS.481..194L: **2 citations**

Lines, S.; Manners, J.; **Mayne, N. J.**; Goyal, J.; Carter, A.; Boutle, I.; Lee, G.; et al.  
*(abridged) Exonephology: a transmission spectrum of a simulated cloudy HD 209458b.*

32 2018A&A...615A..97L: **12 citations**

Lines, S.; **Mayne, N. J.**; Boutle, I. A.; Manners, J.; Lee, G.; Helling, Ch.; et al. incl. Kerslake, M.  
*Simulating the cloudy atmospheres of HD 209458b and HD 189733b with the 3D Met Office GCM.*

31 2018Natur.557..526N: **14 citations**

Nikolov, N.; Sing, D.; Fortney, J.; Goyal, J.; Drummond, B.; Evans, T.; et al. incl. **Mayne, N. J.**  
*An absolute sodium abundance for a cloud-free 'hot-Saturn' exoplanet.*

- 30 2018A&A...612A.105D: **6 citations**  
Drummond, B.; **Mayne, N. J.**; Baraffe, I.; Tremblin, P.; Manners, J.; Amundsen, D. S.; et al.  
*(abridged) The effect of metallicity on the atmospheres of exoplanets.*
- 29 2018ApJ...855L..31D: **11 citations**  
Drummond, B.; **Mayne, N. J.**; Manners, J.; Boutle, I. Baraffe, I.; Tremblin, P.; Sing, D. K.; et al.  
*(abridged) Signatures of wind-driven chemistry with a fully consistent 3D model of HD209458b.*
- 28 2018ApJ...854..171L: **4 citations**  
Lewis, N. T.; Lambert, F. H.; Boutle, .I A.; **Mayne, N. J.**; Manners, J.; Acreman, D. M.  
*The influence of a sub-stellar continent on the climate of a tidally-locked exoplanet.*
- 27 2018MNRAS.474.5158G: **13 citations** (*Erratum*)  
Goyal, J. M.; **Mayne, N. J.**; Sing, D.; Drummond, B.; Tremblin, P.; Amundsen, D. S.; et al.  
*A library of ATMO forward model transmission spectra for hot Jupiter exoplanets.*
- 26 2017ApJ...841...30T: **21 citations**  
P. Tremblin.; G. Chabrier.; **N. J. Mayne.**; Amundsen, D. S.; I. Baraffe.; F. Debras.; et al..  
*(abridged) Advection of potential temperature in the atmosphere of irradiated exoplanets.*
- 25 2017A&A...604A..79M: **6 citations**  
**N. J. Mayne**; F. Debras; I. Baraffe; John Thuburn; David S. Amundsen; David M. Acreman; et al.  
*Results from a set of three-dimensional numerical experiments of a hot Jupiter atmosphere.*
- 24 2017A&A...601A.120B: **19 citations** (*Corrigendum*)  
I. A. Boutle.; **Nathan J. Mayne**; Benjamin Drummond; James Manners; Jayesh Goyal; et al.  
*Exploring the climate of Proxima Centauri B with the Met Office Unified Model.*
- 23 2017A&A...598A..97A: **23 citations**  
Amundsen, D. S.; Pascal Tremblin.; James Manners.; Isabelle Baraffe.; & **N. J. Mayne.**  
*(abridged) Treatment of overlapping gaseous absorption with the correlated-k method.*
- 22 2016A&A...595A..36A: **26 citations**  
Amundsen, D. S.; **N. J. Mayne.**; Isabelle Baraffe.; James Manners.; Pascal Tremblin.; et al.  
*(abridged) UK Met Office GCM with a sophisticated radiation scheme applied to HD 209458b*
- 21 2016A&A...594A..69D: **24 citations**  
B. Drummond.; P. Tremblin.; I. Baraffe.; D. S. Amundsen.; **N. J. Mayne.**; O. Venot.; J. Goyal.  
*(abridged) Effects of Consistent Chemical Kinetics on PT profiles & Emission of Hot Jupiters*
- 20 2016MNRAS.460..855H: **26 citations**  
Helling, CH.; Lee, G.; Dobbs-Dixon, I.; **Mayne N.**; Amundsen, D. S.; Khaimova, J.; et al.  
*The mineral clouds on HD 209458b and HD 189733b.*
- 19 2014MNRAS.445.3496B: **23 citations**  
Bell, Cameron P. M.; Rees, Jon M.; Naylor, Tim; **Mayne, N. J.**; et al.  
*Pre-main-sequence isochrones – III. The Cluster Collaboration isochrone server.*
- 18 2014GMD.....7.3059M: **17 citations**  
**Mayne, N. J.**; Baraffe, I.; Acreman, D. M.; Smith, C.; Wood, N.; Skålid Amundsen; et al.  
*Using the UM dynamical cores to reproduce idealised 3-D flows.*
- 17 2014A&A...564A..59A: **58 citations**  
Amundsen, David S.; Baraffe, I; Tremblin, P; Manners, J; Hayek, W; **Mayne, N. J.**; et al.  
*Accuracy tests of radiation schemes used in hot Jupiter global circulation models.*
- 16 2014A&A...561A...1M: **53 citations**  
**Mayne, Nathan J.**; Baraffe, Isabelle; Acreman, David M.; Smith, Chris; et al.  
*(abridged) The unified model, applied to hot Jupiters. ENDDGame for a HD 209458b test case.*
- 15 2013MNRAS.434.2438J: **16 citations**  
Jeffries, R. D.; Naylor, Tim; **Mayne, N. J.**; Bell, Cameron P. M.; Littlefair, S. P.  
*A lithium depletion boundary age of 22 Myr for NGC 1960.*
- 14 2013MNRAS.434..966S: **14 citations**  
Sergison, Darryl J.; **Mayne, N. J.**; Naylor, Tim; Jeffries, R. D.; Bell, Cameron P. M.  
*No evidence for intense, cold accretion on to YSOs from measurements of Li in T-Tauri stars.*

- 13 2013MNRAS.434..806B: **128 citations**  
Bell, Cameron P. M.; Naylor, Tim; **Mayne, N. J.**; Jeffries, R. D.; Littlefair, S. P.  
*Pre-main-sequence isochrones - II. Revising star and planet formation time-scales.*
- 12 2012MNRAS.424.3178B: **39 citations**  
Bell, Cameron P. M.; Naylor, Tim; **Mayne, N. J.**; Jeffries, R. D.; Littlefair, S. P.  
*Pre-main-sequence isochrones - I. The Pleiades benchmark.*
- 11 2012ApJ...755...97G: **102 citations**  
Gregory, S. G.; Donati, J.-F.; Morin, J.; Hussain, G. A. J.; **Mayne, N. J.**; et al.  
*(abridged) Can We Predict Global Magnetic Topology of PMS Star from HR Diagram?*
- 10 2012MNRAS.423.1775M: **7 citations**  
**Mayne, N. J.**; Harries, Tim J.; Rowe, John; Acreman, David M.  
*Bayesian fitting of Taurus brown dwarf spectral energy distributions.*
- 9 2011MNRAS.418.1948J: **66 citations**  
Jeffries, R. D.; Littlefair, S. P.; Naylor, Tim; **Mayne, N. J.**  
*No wide spread of stellar ages in the Orion Nebula Cluster.*
- 8 2011MNRAS.413L..56L: **25 citations**  
Littlefair, S. P.; Naylor, Tim; **Mayne, N. J.**; Saunders, Eric; Jeffries, R. D.  
*Accretion-induced luminosity spreads in young clusters: evidence from stellar rotation.*
- 7 2010MNRAS.409.1307M: **9 citations**  
**Mayne, Nathan J.**; Harries, Tim J.  
*On the properties of discs around accreting brown dwarfs.*
- 6 2010MNRAS.408.1409M: **7 citations**  
**Mayne, N. J.**  
*Observational indicators of the transition from fully convective stars to stars with radiative cores.*
- 5 2010MNRAS.403..545L: **25 citations**  
Littlefair, S. P.; Naylor, Tim; **Mayne, N. J.**; Saunders, Eric S.; Jeffries, R. D.  
*Rotation of young stars in Cepheus OB3b.*
- 4 2009MNRAS.397..405S: **6 citations**  
Saunders, Eric S.; Naylor, Tim; **Mayne, Nathan**; Littlefair, S. P.  
*Pre-main-sequence variability across the radiative-convective gap.*
- 3 2008MNRAS.386..261M: **98 citations**  
**Mayne, N. J.**; Naylor, Tim.  
*Fitting the young main sequence; distances, ages and age spreads.*
- 2 2007MNRAS.376..580J: **33 citations**  
Jeffries, R. D.; Oliveira, J. M.; Naylor, Tim; **Mayne, N. J.**; Littlefair, S. P.  
*The Keele-Exeter young cluster survey - I. Low-mass pre-main-sequence stars in NGC 2169.*
- 1 2007MNRAS.375.1220M: **69 citations**  
**Mayne, N. J.**; Naylor, Tim; Littlefair, S. P.; Saunders, Eric S.; Jeffries, R. D.  
*Empirical Isochrones and relative ages for young stars and the radiative-convective gap.*

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**Conference Proceedings (reverse date ordered)**

- 9 2019AAS...23322305H:  
Hellier, Coel; Kataria, Tiffany; Mayne, Nathan; Burgasser, Adam; Barstow, Joanna; Nikolov, Nikolay; et al.  
*An absolute sodium abundance for a cloud-free 'hot Saturn' exoplanet*
- 8 2017EGUGA..19.3635B:  
Boutle, Ian; Lines, Stefan; Mayne, Nathan; Lee, Graham; Helling, Christiane; et al.  
*Exoplanet modelling with the Met Office Unified Model*
- 7 2014spih.confE..37T:  
Tremblin, P.; Drummond, B.; Mourier, P.; Amundsen, D.; **Mayne, N.** et al.  
*Modeling UV photo-chemistry and clouds in the atmosphere of exoplanets*
- 6 2014IAUS..302...40G: **6 citations**  
Gregory, S. G.; Donati, J.-F.; Morin, J.; Hussain, G. A. J.; **Mayne, N. J.** et al.

- Can we predict the magnetic properties of PMS stars from their H-R diagram location?*
- 5 2013EPSC....8...12M:  
**Mayne, N. J.**; Baraffe, I.; Acreman, D. M.; Smith, C.; Amundsen, D. S.  
*(abridged) A critical analysis of standard approximations in modeling exoplanet atmospheres.*
- 4 2013prpl.conf1K018B:  
 Bell, Cameron P. M.; Naylor, Tim; **Mayne, N. J.**; Jeffries, R. D.; Littlefair, S. P.  
*Revising Star and Planet Formation Timescales.*
- 3 2013prpl.conf1B076S:  
 Sergison, Darryl J.; **Mayne, N. J.**; Naylor, Tim; Jeffries, R. D.; Bell, Cameron P. M.  
*No evidence for intense, cold accretion on to YSOs from measurements of Li in T-Tauri stars.*
- 2 2010HiA....15..763N: **3 citations**  
 Naylor, Tim; **Mayne, N. J.**  
*Are pre-MS stars older than we thought?*
- 1 2009IAUS..258..103N: **3 citations**  
 Naylor, Tim; **Mayne, N. J.**; Jeffries, R. D.; Littlefair, S. P.; Saunders, Eric S.  
*New methods for determining the ages of PMS stars.*

**Notes:** left column: running total, primary/lead author underlined (in REF unit of assessment at Univ. of Exeter). Due to publisher error citations for 2014GMD.....7.3059M incorrectly recorded. Underlined authors are undergraduates at time of publishing e.g., Lewis, N. T.

## Research Impact: Case Studies

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“**Exoplanet Explorer**”: is an effort to produce a computer animated short movie, similar to the “Wanderers” produced by Erik Wernquist which has been viewed almost 6 million times, but featuring exoplanet exploration. I am also working to combine this with a game platform allowing the introduction of elements of our world leading exoplanet research with an in-built measure of the impact we are having. This proposal was assessed by members of the University of Exeter IIB (Innovation, Impact and Business) impact team, and rated as potentially 3\*/4\*, and has been awarded £15 000 from the IIB fund (as well as ~£6 000 contribution from the College of Engineering, Mathematics and Physical Sciences, CEMPS). This was followed by ~£28 000 provided via the STFC consolidated grant. I am currently working with colleagues across IIB and external organisations (e.g. Engine House, Kalieder, At-Bristol) to realise this.

Current outputs include:

- NASA & Univ. of Exeter press release viewed over 70,000 times in the first week.
- 360° immersive animations of a young Jupiter-type planet, an evaporating hot Jupiter, a view within the cloud deck of a hot Jupiter, a super-Earth waterworld, a lava planet, 55 Cancri e and Trappist 1e (8K) (Trappist 1e (4K))
- A mini-documentary in 360° on exoplanets, viewed over 3,000,000 times in the 18 months.

**Winner of Bronze and People’s choice Award, Lovie Awards, 2018**

**Outreach:** I am also a key member of the astrophysics group’s outreach focused impact case monitoring the effect of our activities both directly through feedback etc., and indirectly through the higher education access database (HEAT). Recent key contributions I have made to this case are the development of several short concept videos, and the co-creation of a Physics youtube channel. It is anticipated that many of my engagement activities will be included in this case.

## Research Impact: Engagement

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- *Events:* Provision of VR experience for South West Space Innovation Event, 2019; 3-minute wonder competition at Festival of Science. *invited heat finals:declined.*, 2013; Britain Needs Scientists, presentation, 2013, 2014; presentation at Disney futures workshop, 2015; 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>1</sup>; Pint of Science presentation, Exeter, 2015, 2018; panel member for discussion at ‘Greater than I’ Panel Exeter Art Week Exeter, 2018; School Physicist of the Year, presentation 2015, 2017, 2018; presentation at National Space Centre, Space Late event, 2018
- *Public Presentations:* open evening, international year of astronomy, organisation & overview presentation, University of Exeter, 2010; Cafe Scientifique, Sidmouth, 2012; National dark skies reserve, 2013; Christmas lecture, University of Exeter, 2014; Christmas lecture, Devonport High School for boys 2015; Stargazing Live! event, Univ. of Exeter, 2016; Plymouth Astronomical Society, 2016; Penryn Campus, Univ. of Exeter, 2016; evening lecture, Camborne Science and International Academy, 2016; evening lecture, Thomas Hardy School Dorchester, 2016
- *Presentations for Schools:* Yeovil College, ‘Meet the Scientist’, poster & workshop, 2008; International School, Dubai 2009; Uffculme School, 2010; Badminton School, Bristol, 2012; Exwick Heights, Exeter, 2013; home educated, and behavioural problem group, Redruth, 2014; St Luke’s Science week, 2014; Tavistock school visit, 2013, 2014; Stoke Hill Junior school, Exeter 2015, 2015; Careers in physics at Truro College, 2014, 2015, 2016; Communication Skills Course, 2016; Year 7 “Space Day”, Exeter College, Exeter 2017; Withycombe Raleigh CoE, Exmouth 2017; physics progression programme lecture, 2018; St Johns International, Sidmouth 2018; NEXUS Camborne Science & International Academy, 2018
- *Presentations to Societies/Groups:* Brannell Astronomy Society, Callington, 2010; Astronomy Society, seminar, Tiverton, 2011; Astronomy Society, Callington, 2011; Cornwall Astronomy Society, Penryn, 2011; Senior Physics Society, Charterhouse School, 2014; Cornwall Amateur Astronomy

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<sup>1</sup><https://live.newscientist.com/talks> ~30,000 visitors

Society, Mabe, 2015; Norman Lockyer Observatory, Sidmouth 2015; Torbay Astronomical Society, 2015; Kaleider collaborative studio, 2016; U3A (University of the Third Age), Exeter, 2017; Exmouth Sea-Cadets, 2018

- *Miscellaneous*: 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, 2016; Story on nomination of video for Lovie Award; Winner of Bronze and People’s choice Award at the Lovie Awards, 2018

## Education

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- **Fellow of the Higher Education Academy (F-HEA)**, 2017
- Nominated for teaching award, Univ. Exeter 2010

Third year tutorials, 4 groups (1 hr/week each), 20 students (Bsc & Mphys)	2015–2016
Lead teaching assistant: general problem class (lectures & tuition)	2011
Teaching assistant: astrophysics lab (2 <sup>nd</sup> year) (preparation, marking & delivery)	2008
Lead teaching assistant: C-programming lab (preparation, marking & delivery)	2008
Teaching assistant: astrophysics lab (1 <sup>st</sup> year), (marking, delivery)	2007
Lead teaching assistant: practical physics lab (preparation, marking & delivery)	2005–2011
Communication skills course (organisation and lectures)	2004–2016
Pre-University physics course (organisation and/or lectures)	2004–2016

### Undergraduate Supervision:

#### *Primary Current:*

Jake Eager	MPhys: Masters Project	2018–Jul. 2019
& David Reichalt	(Exo)Planet climatology	

- *Completed UG*: Scott Larcombe, Harry McCrea, Duncan Lyster & 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 Supervision

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#### *Postdoctoral Current:*

Dr. Stefan Lines	Postdoctoral: exoplanet modelling Clouds in Brown Dwarfs, & gas giants	2016–Apr. 2022
Dr. Ian Boutle	Expert Scientist, Met Office Secondment Atmospheric modelling: clouds	2016–present
Dr. James Manners	Senior Research Scientist, Met Office Secondment Atmospheric modelling: radiative transfer	2013–present
Dr. Ben Drummond	Postdoctoral: exoplanet modelling <i>co-supervisor: Dr. E. Hébrard</i>	2017–Nov. 2021

#### *PhD Current:*

Robbie Ridgway	PhD: exoplanet modelling <i>co-supervisor: Dr. H. Lambert</i>	2018–Jun. 2021
Simon Lance	PhD: exoplanet modelling <i>co-supervisor: Prof. M. Browning</i>	2018–Jun. 2021
Jayesh Goyal	PhD: exoplanet modelling <i>co-supervisor: Prof. D. Sing</i>	2015–Apr. 2019
Mark Phillips	PhD: chemistry in (exo)planet atmospheres	2016–Jun. 2019



	<i>co-supervisor: Prof. I. Baraffe</i>	
Jessica Spake	PhD: hot Jupiter Atmospheres	2015–Jun. 2019
	<i>co-supervisor: Prof. D. Sing</i>	

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*Technical/Support Current:*

Krisztian Kohary	UM Software support	2018–present
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- *Completed Postdoctoral:* Dr. Paul Cresswell (Met Office Secondment, 2016–2017); Dr. Chris Smith (Met Office Secondment, 2013–2015)
- *Completed PhD (5):* Dr. Florian Debras (*co-supervisor: Prof. G. Chabrier*, moved to postdoc Univ. Toulouse, 2016–2019); 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)
- *Completed MSc:* Charlie Sweetland (MSc: Advanced Mathematics, 2015) (*Graduated PhD/MSc student's current academic institute given where student continued in academia*)

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

## Leadership & Management: Institutional Responsibilities

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Global Systems Institute, Academic Working Group ( <i>deputy for Prof. I. Baraffe</i> )	Jan. 2018–present
Member of Centre for Intermedia and Creative Technology Network, Univ. Exeter	Jan. 2018–present
Admissions Tutor, Physics & Astronomy, Univ. of Exeter	Sep. 2016–2019
<b>Awarded: “Above &amp; Beyond” Bronze award (£500).</b>	
<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
Assistant Director of Education, Physics & Astronomy, Univ. of Exeter	Sep. 2016–2018
Inclusivity Strategy/Writing Group, Physics & Astronomy, Univ. of Exeter	Sep. 2013–2019
Inclusivity Working Groups, Physics & Astronomy, Univ. of Exeter	Sep. 2012–2019
<b>Discipline Awarded: Juno Champion Status (2018)</b>	
<b>Discipline Awarded: Athena Swan Silver (2018)</b>	
<b>Discipline Awarded: Athena Swan Bronze (2015)</b>	
Postdoctoral Secondary Facilitator, CEMPS, Univ. of Exeter	Sep. 2010-Apr. 2014

## Leadership & Management: Initiatives & Contributions

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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
<i>Interaction &amp; discussion sessions</i>	
UCAS Admissions, Physics & Astronomy, Univ. of Exeter	2014–present
<i>Interviews, presentations &amp; discussions sessions</i>	
Natural Sciences Offer-Holder visit day, Univ. of Exeter	2014
<i>Presentation and discussion sessions</i>	
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 <i>general</i> , Physics & Astronomy, Univ. of Exeter	1997–present
<i>Tours, hosting and external visits</i>	

## Institutional Responsibilities: Panels & Reviewing

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Interview panel for technical support position, Physics & Astronomy, Univ. of Exeter	2018
Interview panel for PDRA positions, Physics & Astronomy, Univ. of Exeter	2016,2017,2018
Interviewer for group PhD positions, Physics & Astronomy, Univ. of Exeter	2016
Internal referee: CEMPS, Univ. of Exeter	-
<i>Leverhulme RPG, STFC Rutherford fellowship &amp; Royal Society URF proposals</i>	
XM <sup>2</sup> CDT 6 month project presentations chair, CEMPS, Univ. of Exeter	2014

## External Recognition: Media

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- *TV & Video:* Appearance on BBC Stargazing Live! Programme, filmed segment, Jan. 2014; TED<sup>x</sup> Truro, presentation Sep. 2016; BBC Breakfast News interview & special comments (partial eclipse), Mar. 2015; Promotional video for Centre for Intermedia and Creative Technology (CICT), 2018
- *Featured Articles:* Article for “The Conversation”, Oct. 2016; Story in CICT Newsletter, Apr. 2018; Article in University of Exeter Alumni Magazine, Mar. 2018
- *Interviews & Press Releases:* News article, Daily Mail, 2012; 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; 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; Press release on research, University of Exeter, May. 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; Produced Animations with Engine House<sup>2</sup> and At-Bristol<sup>3</sup> 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; Press Release on Virtual Reality Video reaching 1 Million views, Apr. 2018; Interview on POS talk, BBC Radio Devon on, May. 2018; Press Release on Nature publication, May. 2018
- *Miscellaneous:* Research image as front cover of Astronomy & Astrophysics Vol 561, Jan. 2014.

## External Recognition: Presentations

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### Invited Talks: Conferences

- Jan. 2019 Digital Exoplanets, MOLIM/COST Workshop, Charles University, Prague
- Jul. 2018 Spectroscopy of Exoplanets, Cumberland Lodge (University College London)
- Feb. 2018 Met Office Academic Partnership Poster & Presentation Event, Met Office
- Jan. 2018 Dynamics of Rotating Fluids: ‘Dynamics of giant planets’  
University College London
- Jun. 2017 Planetary atmospheres: on Earth, in the solar system, and on exoplanets  
Wenner-Gren Center, Stockholm
- May. 2017 Climate science, atmospheres and life: from the Earth and beyond  
University of Cambridge
- Apr. 2017 Atmospheres of Disks and Planets 2017: Chemistry, Dynamics and Observations  
Ringberg (MPIA), Germany
- Jul. 2016 **Plenary** “CliMathNet” International Conference, University of Exeter

### Invited Talks: Seminars (*exoplanet atmospheres, unless stated*)

- May. 2019 Atmospheric, Oceanic and Planetary Physics, Oxford University

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<sup>2</sup><http://www.engine-house.co.uk/>

<sup>3</sup><https://www.at-bristol.org.uk/>

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

#### Posters (conferences and workshops)

Jan. 2012 “Exoclines II”, Aspen Center for Physics  
 Oct. 2010 “Constellation Meeting” (*star formation*), Tenerife  
 Jul. 2006 “Planet-Disc Connection” (*star formation*), Cambridge University

#### Contributed Talks (*exoplanet atmospheres, unless stated*)

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 “Exoclines, 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

#### Selective Meeting Attendance

Mar. 2012 Royal Society Discussion Meeting, London:  
 “Characterising exoplanets: detection, formation, interiors, atmospheres and habitability”  
 Feb. 2012 Royal Society Discussion Meeting, London:  
 “Dust, Haze and Clouds in Exoplanet Atmospheres”

## External Recognition: Duties

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#### *Organisation of Scientific Meetings:*

- Discussion Session: “Exoplanet Modelling”, UKEXOM, ~30 delegates, St Andrews, Mar. 2017
  - Workshop: “Idealised Planetary Modelling”, ~30 delegates, Univ. Exeter, Feb. 2016
  - SOC (Scientific Organising Committee): Exoclines 2019, EWASS symposium (Liverpool, Apr. 2018), UKEXOM (Oxford, Mar. 2018), UKEXOM (Univ. Exeter, Apr. 2016), GCM workshop (Exeter, 2011)
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#### *Commissions of Trust:*

- DiRaC Exoplanet Science case for Project Board (*lead author: R. Alexander*)
- ‘White Paper’: UK Exoplanet Modelling author (in –prep).

- **Invited to write review article for “Living Reviews in Computational Astrophysics (LRCA)”, 2017-2018**
- Panel member for discussion session: “Learning from Exoplanets”, CliMathNet, Jul. 2016
- ESO OPC Panel Co-Chair (P97-C4, P98-C2) 2015/2016 (requested P99-declined)
- Reviewer: ApJ, MNRAS, PASA, Royal Society (URF), Swiss National Supercomputing Centre (CSCS), NASA (NSPIRES), STFC Consolidated and Ernest Rutherford Fellowships, NWO (Vidi), Nature Astronomy
- Member of ARIEL consortium.