

1) PERSONAL INFORMATION

Name: Dr. Tamara Rogers

Academic Unit: School of Mathematics & Statistics

Title of Current Appointment: Reader (Grade Ia 50)

Website: www.solarphysicist.com

Education:

1999-2006 Ph.D. Astronomy & Astrophysics, University of California, Santa Cruz, USA, "Numerical Simulations of Convection, Overshoot and Waves in the Sun", Advisor: Prof. Gary Glatzmaier

1995-1999 B.S. Physics & Astronomy, The University of Arizona, Tucson, USA, *Magna Cum Laude*

Academic Appointments Held:

2016-current Reader, Department of Mathematics and Statistics, Newcastle University, UK

2015-2016 Senior Lecturer, Department of Mathematics and Statistics, Newcastle University, UK

2014-2015 Lecturer, Department of Mathematics and Statistics, Newcastle University, UK

*2015-present Senior Research Scientist, Planetary Science Institute, Tucson, AZ, USA

2008-2014 Assistant Professor, Department of Planetary Sciences, University of Arizona, Tucson, USA

2006-2008 NSF Astronomy & Astrophysics Postdoctoral Fellow, High Altitude Observatory, NCAR, Boulder, USA

* I maintain this affiliation so that I have access to NASA/NSF funds and computational resources

2) ACHIEVEMENTS INDICATING EXCELLENCE

Summary: *In the last five years I have published 10 papers, I am lead author on eight and two are sole author. Using the scoring scheme accepted by the faculty and our interim formula, at least 5 would be considered 4*, three of these should be eligible for the next REF. Since arriving at Newcastle in 2015 I have written five papers of which at least two would be considered 4*.*

Research Indicators

(Data Collected on 1/6/2017 from Google Scholar)

Total # of Papers: 23, Total Citations: 682, H-index=17, Citations/Article = 30

PhD Student Supervision:

9/16-present Alex Hindle, Variable Conductivity Dynamos, funded through STFC

5/16-present Rathish Ratnasingam, IGW in Massive Stars, funded through SAgE DTA

8/13-8/15 Tad Komacek, Magnetism in Hot Jupiter Atmospheres, University of Arizona

8/12-1/15 Jess Vriesema, Dynamics of the Solar Interior, University of Arizona

Teaching:

- 2017 Module Leader: Advanced Astrophysics (*Stellar Structure and Evolution*)
- 2015, 2016 Module Leader: Introduction to Astrophysics (*part of the new physics curriculum*)
- 2015, 2016, 2017 Lecturer: Turbulence (part of *Instabilities, Turbulence and Scaling* for third year Maths students)
- 2009-2014 Module Leader: *Universe and Humanity, Origin and Destiny*
General education course on basic astronomy and planetary science. Typically had 100-160 students.
- 2011-2013 Module Leader: *Principles of Planetary Physics*
Graduate course covering kinetic theory, basic fluid dynamics, magnetohydrodynamics and basic computational fluid dynamics.
see: <https://www.youtube.com/watch?v=2SssC0gfr0>
- 2011 Module Leader *Methods in Computational Astrophysics*
Graduate course on computational methods in fluid dynamics.

Completed Newcastle Teaching Award October 2016**Thesis Committees**

External Examiner for Ph.D. Timothy Van Reeth, Leuven
Committee member for Ph.D. May Gade Peterson, Leuven

Organization of Scientific Meetings:

2015 Co-Organizer, Waves in Stellar Interiors, Freiburg, Solarnet III meeting, Germany
2014 Organizer, Dynamics of Planetary and Stellar Interiors, San Diego, USA

Leadership:

2016 Strategic Leaders Development Course
2016 SAgE Leadership program

Outreach:

I am very active in public outreach. In the last five years I have given nearly 20 public talks or lectures on Solar Physics, Astronomy and Planetary Science, with audiences ranging from elementary school children to enthusiastic adults. Since starting at Newcastle University I have participated in numerous outreach events including the Maths WISDOM event, multiple Physics Open Days, Explore your Universe at the Hancock museum, school visits and a talk to Year 11 students.

Equality and Diversity:

As head of the Equality and Diversity within the school I have spearheaded many of our initiatives including: 1) school-wide unconscious bias training, 2) new maternity guidelines (which are now example of best practice within the Faculty), 3) a carer's fund (for which we are the pilot school within the university), 4) fraction of female seminar speakers has increased from roughly 5-15% (before I was lead) to 30-40% in the last year and 5) we are launching a "Restart" fellowship. I also started Women in Math's lunches where we discussed promotion, imposter syndrome and stereotype threat and unconscious bias. This year these lunches have been taken over by postgraduate students.

Institutional Responsibilities:

2015 Physics Research Strategy Group

2015 Personal Tutor

2015, 2016 Interview Panel for new applied maths/physics appointments

2015-2017 Chair, Equality and Diversity Committee

2010-2014 University of Arizona, Department of Planetary Science Committees:
Recruitment Committee, Graduate Advising and Admissions Committee, Curriculum
Committee, Computing Committee and Journal Club

3) NATIONAL AND INTERNATIONAL RECOGNITION

Summary: In 2011 I was a National Academy of Sciences Frontiers of Science Fellow. Over the last five years I have given more than 20 invited talks in nine different countries. Since arriving at Newcastle in January 2015, I have been invited to give twelve talks in five countries and have organised a session in a sixth. Since arriving at Newcastle in January 2015 I have secured £800,000 of grant funding.

Awards and Prizes:

2011 National Academy of Sciences- Kavli Frontiers of Science Fellow, USA

“The Academy's Kavli Frontiers of Science symposia bring together outstanding young scientists to discuss exciting advances and opportunities in a broad range of disciplines. Since its inception, 136 program alumni have been elected to the National Academy of Sciences and eight have won Nobel Prizes.”

Research Grants:

£223,000 *Modeling Inhomogeneous magnetohydrodynamics in hot Jupiter atmospheres*,
Leverhulme Trust, 2017-2021, PI: Rogers

\$515,000 *The role of wave dynamics on the Origin and Evolution of hot Jupiters*, NASA,
2017-2020, PI: Rogers

£290,000 *Internal Gravity Waves in Massive Stars*, STFC, 2016-2019, PI: Rogers

\$50,000 *The Role of Wave Dynamics on the Origin and Evolution of Hot Jupiters*, NASA ,
2015-2016 PI: Rogers

\$30,000 *Magnetism in Hot Jupiter Atmospheres*, NASA/NESSF, 2014-2015

PI: Rogers *Note this was a grant to fund my Ph.D. student Tad Komacek

\$368,000 *Numerical Simulations of Magnetism in Hot Jupiters*, NASA, 2013-2018
PI: Rogers

\$330,000 *Numerical Simulations of Solar Interior Dynamics*, NASA, PI, 2012-2015
PI: Rogers

\$1,000,000 *Faculty Position in Solar Physics*, NSF, Acting PI, 2008-2013
PI: Jokipii, Acting PI: Rogers

Note: NASA funds can not go to non-US institutions, so these grants are routed through my US affiliation - Planetary Science Institute.

Computer Time:

2017 8 Million CPU hours on Pleiades at NASA Ames, PI

2016 6 Million CPU hours on Pleiades at NASA Ames, PI

2015 8.6 Million CPU hours on Pleiades at NASA Ames, PI

2015 8.6 Million CPU hours on Pleiades at NASA Ames, PI

2014 8 Million CPU hours on Pleiades at NASA Ames, PI

Media:

http://www.nas.nasa.gov/publications/articles/feature_hotjupiter_Rogers.html
<https://www.nature.com/natastron/volumes/1/issues/6>
<https://www.sciencenews.org/article/magnetism-disrupts-winds-hot-jupiter-exoplanet>
<https://phys.org/news/2017-05-variable-hot-giant-exoplanet-magnetic.html>
http://www.spacedaily.com/reports/Variable_Winds_on_Hot_Giant_Exoplanet_Help_Study_of_Magnetic_Field_999.html
[https://archaeologynewsnetwork.blogspot.co.uk/2017/05/variable-winds-on-hot-giant-exoplanet.html?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed:+TheArchaeologyNewsNetwork+\(The+Archaeology+News+Network\)#8fQbD15pUxYAJAKB.97](https://archaeologynewsnetwork.blogspot.co.uk/2017/05/variable-winds-on-hot-giant-exoplanet.html?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed:+TheArchaeologyNewsNetwork+(The+Archaeology+News+Network)#8fQbD15pUxYAJAKB.97)
<https://www.leverhulme.ac.uk/sites/default/files/Publications/LEVERHULME%20LORES%20MAY17.pdf>

Invited Presentations, since 2011:

2017 KITP, Santa Barbara, USA, Invited Talk, Phenomena, Physics, and Puzzles Of Massive Stars and their Explosive Outcomes
2017 KITP, Santa Barbara, USA, Invited long term participant, *Physics of Massive Stars*
2017 Birmingham Astrophysics Seminar, UK
2016 Pulsation and Rotation in Massive Stars, Invited Talk, Lake District UK
2016 Seismology of the Sun and Stars, Invited Review Talk Azores, Portugal
2016 Royal Astronomical Observatory, Edinburgh Seminar, UK
2016 Queen Mary, London Astrophysics Seminar, UK
2015 Hertfordshire Astrophysics Seminar, UK
2015 Cambridge DAMTP Astrophysics Seminar, UK
2015 KU Leuven Belgium, mini-symposium Waves in Astrophysics
2015 Toulouse, France, Astrophysics Seminar
2015 Warwick UK Exoplanet meeting, Institutional Overview Talk
2015 Exeter, UK, Astrophysics seminar
2014 KITP, Santa Barbara, USA, Invited Participant in *Wave Mean-Flow Interactions*
2014 UA Origins Program, USA, Invited Seminar
2014 Exoclimates III, Davos, Switzerland, Invited Review
2013 Ohio State University, USA, Invited Seminar
2013 University of Alberta, CA, Invited Seminar
2013 Connecting Theory to Experiments in GAFD, UCLA, USA, Invited Talk
2013 Next Generation Stellar Models, Leiden, The Netherlands, Invited Talk
2013 University of California, Santa Cruz, USA, Invited Seminar
2013 Waves and Instabilities in GAFD, Les Houches, FR, Invited Talk
2012 Northwestern University, USA, Invited Seminar
2012 University of Arizona, USA, Invited Seminar
2011 Supercomputing 2011, USA, Invited Presentation
2011 National Academy of Sciences Frontiers of Science Symposium, Shenzhen CN
2011 Geophysical and Astrophysical Internal Waves, Les Houches, Invited Talk
2011 IST Austria, Invited Seminar

Commissions of Trust:

2017 Athena/SWAN Panelist
2017 STFC DiRAC Research Allocation Committee
2016 NASA Review Panel, Astrophysics Theory
2015 Review Editor for Stellar and Solar Physics, *Frontiers in Astronomy, Space Sciences and Physics*
2015 NASA Review Panel, Exoplanet Research Program
2014 National Science Foundation (NSF) Review Panel, Faculty Development in Space Sciences
2013 NASA Review Panel, Heliophysics & Space Science Program
2012 NASA Review Panel, Heliophysics & Space Science Program
2012 NSF Review Panel, Plasma Physics Program
2011-2013 National Academy of Sciences Research Associates Panel Reviewer (Postdoctoral Fellowship program)
2008-2011 NSF Teragrid Supercomputer Allocation Committee
2011 University of Arizona Physics Department, Academic Program Review Committee
ONGOING Reviewer for *Science, Astronomy & Astrophysics, Monthly Notices of the Royal Astronomical Society, Astrophysical Journal, Geophysical and Astrophysical Fluid Dynamics, New Astronomy*

International Collaborators:

Prof. Conny Aerts, KU Leuven, Belgium
Prof. Gary Glatzmaier, University of California, Santa Cruz, USA
Prof. Doug Lin, University of California, Santa Cruz, USA
Prof. Adam Showman, University of Arizona, USA

Publications

[23] **T M Rogers**, *Constraints on the magnetic field strength of HAT-P-7b and other hot giant exoplanets*, *Nature Astronomy*, 2017, **Featured on the Cover**, 1, 0131 (100%)
[22] **T M Rogers** and J N McElwaine, *The hottest hot Jupiters may host Atmospheric Dynamos*, *The Astrophysical Journal Letters*, 2017, *ApJL*, 641, 2 (60%)
[21] Aerts...and **T M Rogers** (15 authors), *Kepler sheds new and unprecedented light on the variability of a blue supergiant: Gravity waves in the O9.5Iab star HD188209*, *A&A*, 2017 (5%)
[20] **T M Rogers**, *On the Differential Rotation of Massive main Sequence Stars*, *The Astrophysical Journal Letters*, 2015, (100%)
[19] Aerts, C. and **Rogers, T M** *Observational Signatures of Internal Gravity Waves in Massive Stars*, *The Astrophysical Journal Letters*, 806, L33, 2015 (40%)
[18] **T M Rogers** and T D Komacek. *Magnetic effects in Hot Jupiter Atmospheres*, *The Astrophysical Journal*, 794, 132, 2014 (90%)
[17] **T M Rogers** and A P Showman. *Magnetohydrodynamic Simulations of the Atmosphere of HD 209458b*, *The Astrophysical Journal Letters*, 782(1):L4, 2014 (90%)
[16] **T M Rogers**, D N C Lin, J N McElwaine, and H H B Lau. *Internal Gravity Waves in Massive Stars: Angular Momentum Transport*. *The Astrophysical Journal*, 772(1):21, 2013 (70%)
[15] **T M Rogers** and D N C Lin. *On the Tidal Dissipation of Obliquity*. *The Astrophysical Journal Letters*, 769(1):L10, 2013 (60%)
[14] **T M Rogers**, D N C Lin, and H H B Lau. *Internal Gravity Waves Modulate the Apparent Misalignment of Exoplanets around Hot Stars*. *The Astrophysical Journal Letters*, 758:L6, 2012 (70%)

- [13] **T M Rogers**. *On Limiting the Thickness of the Solar Tachocline*. The Astrophysical Journal, 2011, 733(1):12, 2011 (**100%**)
- [12] **T M Rogers** and K B MacGregor. *On the interaction of internal gravity waves with a magnetic field - II. Convective forcing*. Monthly Notices of the Royal Astronomical Society, 410:946, 2011 (**70%**)
- [11] **T M Rogers**. *Toroidal Field Reversals and the Axisymmetric Tayler Instability*. The Astrophysical Journal, 735(2):100, 2011 (**100%**)
- [10] K B MacGregor and **T M Rogers**. *Reflection and Ducting of Gravity Waves Inside the Sun*. Solar Physics, 270(2), 417:436, 2011 (**20%**)
- [9] **T M Rogers** and K B MacGregor. *On the interaction of internal gravity waves with a magnetic field - I. Artificial wave forcing*. Monthly Notices of the Royal Astronomical Society, 401:191, 2010 (**70%**)
- [8] G Glatzmaier, M Evonuk and **T M Rogers**. *Differential Rotation in giant planets maintained by density stratified turbulent convection*. Geophysical and Astrophysical Fluid Dynamics 103:31 2009 (20%)
- [7] **T M Rogers**, K B Macgregor and G A Glatzmaier. *Nonlinear Dynamics of gravity wave driven shear flows in the solar radiative interiors*. Monthly Notices of the Royal Astronomical Society, 387: 616 2008 (70%)
- [6] **T M Rogers**, Chris Jones and Gary A Glatzmaier. *Numerical Simulations of Penetration and Overshoot in the Sun*. The Astrophysical Journal, 653:765, 2006 (**70%**)
- [5] **T M Rogers** and Gary A Glatzmaier. *Angular Momentum Transport by gravity waves in the solar interior*. The Astrophysical Journal, 653:756, 2006 (**70%**)
- [4] **T M Rogers** and Gary A Glatzmaier. *Gravity waves in the Sun*. Monthly Notices of the Royal Astronomical Society, 364:1135, 2005 (**70%**)
- [3] **T M Rogers** and Gary A Glatzmaier. *Penetrative convection within the Anelastic Approximation*. The Astrophysical Journal 620:432, 2005 (**70%**)
- [2] **T M Rogers**, Gary A Glatzmaier and S.E. Woosley. *Simulations of two-dimensional turbulent convection in a density stratified fluid*. Physical Review E, 67:6315, 2003 (**70%**)
- [1] P.A. Pinto, R.G. Eastman and **T M Rogers**. *A Test for the Nature of the Type Ia Supernova Explosion Mechanism*. The Astrophysical Journal, 551:231, 2001 (**50%**)