Paul James Wright

Contact Information

Rm 614, Kelvin Building
University of Glasgow
Glasgow, G12 8QQ
United Kingdom

Work: +44 (0)14133 08855
Web: www.pauljwright.co.uk
Email: paul.wright@glasgow.ac.uk
Publication List: SAO/NASA ADS

Research Interests

My interests range from stellar to solar physics; my main interests lie in the heating of the solar atmosphere, including active regions and loops. I have expertise in analysis of data from *Kepler*, *SDO*/AIA, *Hinode*/EIS, *Hinode*/XRT, and *NuSTAR*'s heliophysics observations. In addition, I am currently modelling coronal light-curves using the `EBTEL` (Enthalpy Based Thermal Evolution of Loops) hydrodynamic code.

Education

University of Glasgow, Glasgow, UK — 2014 – present (expected 2018)
Ph.D. Solar Physics
Thesis Topic: *The Energetics of Small Flares and Brightenings*
Advisers: Dr Iain G. Hannah, Dr Alexander MacKinnon

University of Southampton, Southampton, UK — 2010 – 2014
MPhys Astrophysics with a year abroad
First-class honours (1:1)
Adviser: Professor Malcolm Coe

Harvard University/Harvard-Smithsonian CfA, Cambridge, MA — 2013 – 2014
MPhys Astrophysics with a year abroad
Thesis Topic: *Superflare Rates of Solar-Like Stars*
Advisers: Dr Steven H. Saar, Dr Jeremy J. Drake

Current Academic Appointment

Affiliate Staff Member, University of Glasgow — 2017 – present
SUPA School of Physics and Astronomy
- Investigating coronal time-series data for signs of the coronal heating mechanism.

Previous Academic Appointments

Post-Graduate Research Assistant, University of Glasgow — 2014 – 2017
SUPA School of Physics and Astronomy
Project: *The Energetics of Small Flares and Brightenings*
- Analysed observations of the Sun with *NuSTAR*, a telescope not designed for heliophysics. These observations are the most sensitive of their kind and have resulted in numerous, wide-ranging highly-collaborative peer-reviewed publications.
- Analysed non-flaring coronal time-series in pursuit of signatures of the coronal heating mechanism. Techniques included time-lag analysis (cross-correlation), Fourier analysis, wavelet analysis, and local intermittency measure (LIM).
- Studied the temperature distribution of the solar atmosphere through the recovery of an ill-posed inverse problem (the differential emission measure, DEM) using techniques such as Tikhonov regularisation, Markov-Chain Monte Carlo, and sparsity.
- The press-release image produced from the *NuSTAR* observations analysed in Wright *et al.* 2017 was published by multiple news outlets, and is one of the five iconic images from *NuSTAR*'s first five years in space.

Collaborators: *Dr Iain Hannah, Dr Alexander MacKinnon*

Visiting Researcher, NASA Goddard Space Flight Center (GSFC) — 2016
Heliophysics Science Division
- Worked on the possibility of implementing DEM maps in the Helioviewer project, and their usefulness as an input for various established analysis techniques.

Collaborators: *Dr Nicholeen Viall, Dr Jack Ireland*

Research Scholar, Harvard-Smithsonian Center for Astrophysics (CfA) — 2013 – 2014
Solar and Stellar X-Ray Group
- Designed and implemented a sophisticated stellar flare detection routine for long-cadence (30 mins) *Kepler* data obtained from a proprietary set of spectroscopically verified solar-type stars in three open clusters.
- This work has had coverage by Science, and The Smithsonian Magazine.

Collaborators: *Dr Steven Saar, Dr Søren Meibom, Dr Jeremy Drake, Dr Vinay Kashyap*

Paul James Wright

Refereed Journal Publications

[1] Marsh, A. J., Smith, D. M., Glesener, L. *et al* 2017. *First NuSTAR Limits on Quiet Sun Hard X-Ray Transient Events*, *ApJ* (accepted)

[2] Wang, J., Simões, P. J. A., Jeffrey, N. L. S. *et al* 2017. *Observations of Reconnection Flows in a Flare on The Solar Disk*, *ApJL*, 847, L1

[3] **Wright, P. J.**, Hannah, I. G., Grefenstette, B. W., *et al* 2017. *Microflare Heating of a Solar Active Region Observed with NuSTAR, Hinode/XRT, and SDO/AIA*, *ApJ*, 844, 132

[4] Kuhar, M., Krucker, S., Hannah, I. G., *et al* 2017. *Evidence of Significant Energy Input in the Late Phase of a Solar Flare from NuSTAR X-ray Observations*, *ApJ*, 835, 6

First Author Publications in Preperation

[5] **Wright, P. J.**, Hannah, I. G., Viall, N. M., *et al*

[6] **Wright, P. J.**, Saar, S. H., Meibom, S., *et al*

Conferences, Workshops, & Schools

Invited Oral Presentations

ISSI Team Meeting: Coronal Nanoflares, Bern, CH	2016
Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, USA	2014

Oral/ePoster Presentations

Solar Physics Division Meeting (SPD/AAS), Portland, OR, USA	2017
Coronal Loops Workshop VIII, Palermo, Sicily, IT	2017
Living with a Star (SDO/LWS) Workshop, Burlington, VT, USA	2016
Hinode 10, Nagoya, JP	2016
National Astronomy Meeting 2016, Nottingham, UK	2016
Hinode 9, Belfast, UK	2015
Glasgow-Cambridge Flare Workshop, Glasgow, UK	2015

Poster Presentations

European Solar Physics Meeting (ESPM), Budapest, HU	2017
Solar Physics Division Meeting (SPD/AAS), Portland, OR, USA	2017
Living with a Star (SDO/LWS) Workshop, Burlington, VT, USA	2016
Coronal Loops Workshop VII, Cambridge, UK	2015
NAM 2015, Llandudno, UK	2015
223rd AAS Meeting, National Harbor, MD, USA	2014

Schools Attended

CESRA Radio Summer School 2015, Glasgow, UK	2015
STFC Advanced Summer School in Solar Physics, Dundee, UK	2014

Conferences/Workshops Attended

NuSTAR Heliophysics Workshop (remote participation), Berkeley, CA, USA	2017
SUPA Cormack Astronomy Meeting, Edinburgh, UK	2015
RAS Discussion Meeting: Results from IRIS, London, UK	2015
SUPA Cormack Astronomy Meeting, Edinburgh, UK	2014
1st Space Glasgow Research Conference, Glasgow, UK	2014

Awards and Grants Total: £7000

University of Glasgow

Solar Physics Division Meeting (SPD/AAS) Student Poster Award	2017
Solar Physics Division Meeting (SPD/AAS) Studentship Award	2017
Coronal Loops Workshop VIII Travel Award	2017
National Astronomical Observatory of Japan Travel Award	2016
Hinode 9 Travel Award	2015
European Space Agency/Cambridge Philosophical Society Travel Award	2015

Harvard University/Smithsonian Astrophysical Observatory

233rd AAS Travel Grant	2014

University of Southampton

Research Scholarship	2013
Summer Studentship Grant	2013

Paul James Wright

TEACHING

University of Glasgow

Astronomy 1 Tutorial Demonstrator 2016 - 2017
Supervised students, and marked first year astronomy problem sets.

Physics Pre-University Summer School 2015
Engaged students in various physics experiments and marked assignments.

Astronomy 3/4 (Honours) Laboratory Demonstrator 2015 - 2016
Demonstrated, supervised, and marked a number of final-year research projects covering topics such as asteroid light curves, and solar limb darkening.

MEMBERSHIPS

***NuSTAR* Heliophysics Working Group**, Member 2015 – present

International Space Science Institute (ISSI), Young Scientist Member 2015 – present
Member of Paola Testa's ISSI Team: *New Diagnostics of Particle Acceleration in Solar Coronal Nanoflares from Chromospheric Observations and Modeling*

Royal Astronomical Society, RAS Fellow 2014 – present

COMMUNITY INVOLVEMENT

Nature Communications, Reviewer 2017 – present

Glasgow Astronomy & Astrophysics Group Meeting, Organiser 2017

CESRA Radio Summer School, Volunteer Organiser 2015

SCIENTIFIC OUTREACH

Glasgow Science Centre, Demonstrator 2016

British Science Week, Demonstrator 2016

Institute of Physics: *Women and Girls in Science*, Demonstrator 2016

Scottish Television (STV), Guest Presenter 2015

World Wide Telescope, Ambassador 2013 – 2014

BBC Stargazing Live, Demonstrator 2013

So'ton Astrodome, Demonstrator 2012

BBC Bang Goes The Theory Roadshow, Demonstrator 2012

UK Solar Physics (UKSP) Nuggets, concise, easy-to-read science articles
84. The first *NuSTAR* microflare 2017

Hinode/XRT Picture of the Week (XPOW)
The First Microflare Observations with *Hinode*/XRT & *NuSTAR* 2017

PERSONAL PROJECTS

ColourBlind, A repository for colour-blind-friendly colour tables. Citations: 1

PROFESSIONAL DEVELOPMENT

Coursera, Inc. (MOOC Platform)
Using Coursera.org, a massive open online course (MOOC) platform, to take specializations (a series of related courses and a final capstone project) offered by accredited universities to further develop skills and understanding in a wide range of computer science topics.

Data Science, Johns Hopkins University 2017 – present
Nine-course (plus capstone) introduction to data science.

Mastering Software Development in R, Johns Hopkins University 2017 – present
Four-course (plus capstone) specialization providing riguourous training in R.

Statistics with R, Duke University 2017 – present
Four-course (plus capstone) specialization providing further training in R, with emphasis on statistics.

Big Data, UC San Diego 2017 – present
Five-course (plus capstone) introduction to big data using Hadoop with MapReduce, Spark, Pig and Hive.

Machine Learning, University of Washington 2017 – present
Three-course (plus capstone) introduction to Machine Learning.

Graphic Design, CalArts 2017 – present
Four-course (plus capstone) introduction the fundamental skills required to make sophisticated graphic design.

PROFESSIONAL DEVELOPMENT (CONT.)

edx, Inc. (MOOC Platform)

Introduction to Computer Science (CS50x), Harvard University 2017 – present

An introduction to the intellectual enterprises of computer science and the art of programming including languages such as C, and SQL.

TECHNICAL SKILLS:

Computing: C, Python, R (caret, ggplot2, knitr), SQL, CRAN, IDL, LaTeX, git, GitHub, Hadoop (MapReduce, Spark, Pig, Hive), Linux/Unix, Mac OSX, Microsoft Windows, Bash, Microsoft Office, Adobe Creative Cloud, Keynote, Wordpress, Shiny, GoogleVis, and Plotly, HTML, CSS, Javascript

General: Data Analysis, Data Visualization, Interdisciplinary Collaboration, Public Speaking, Statistics, Teaching, Writing (Technical & Lay)

MORE INFORMATION

More information and auxiliary documents can be found at http://www.pauljwright.co.uk, on ResearchGate, and GitHub.