

Paul James Wright

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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 the analysis of spectroscopic and narrowband Extreme Ultra-Violet (EUV) and X-ray data from the <i>Solar Dynamics Observatory</i> and <i>Hinode</i> , in addition to the hard X-ray (HXR) observations from <i>NuSTAR</i> 's heliophysics campaign. I am currently using a hydrodynamics code (Enthalpy-Based Thermal Evolution of Loop, EBTEL) to model light curves from coronal loops. I am particularly interested in the weak bremsstrahlung emission, with a view to understanding the requirements for future X-ray instrumentation to study the coronal heating problem.	
EDUCATION	University of Glasgow , Glasgow, UK Ph.D. Solar Physics Thesis Topic: <i>The Energetics of Small Flares and Brightenings</i> Advisers: Dr Iain G. Hannah, Dr Alexander MacKinnon University of Southampton , Southampton, UK MPhys Astrophysics with a year abroad First-class honours (1:1) Adviser: Professor Malcolm Coe Harvard University/Harvard-Smithsonian CfA , Cambridge, MA, USA MPhys Astrophysics with a year abroad Thesis Topic: <i>Superflare Rates of Solar-Like Stars</i> Advisers: Dr Steven H. Saar, Dr Jeremy J. Drake	2014 – April 2018 2010 – 2014 2013 – 2014
CURRENT ACADEMIC APPOINTMENT	Affiliate Staff Member , University of Glasgow SUPA School of Physics and Astronomy <ul style="list-style-type: none">Using the EBTEL hydrodynamics code to model light curves from coronal loops. The parameter space of these simulations will be constrained by observations obtained during the <i>NuSTAR</i> heliophysics campaign, and these simulations will be used to test a variety of analysis techniques.	2017 – present
PREVIOUS ACADEMIC APPOINTMENTS	Post-Graduate Research Assistant , University of Glasgow SUPA School of Physics and Astronomy Project: <i>The Energetics of Small Flares and Brightenings</i> <ul style="list-style-type: none">Analysed observations of the Sun with <i>NuSTAR</i>, 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 <i>NuSTAR</i> observations obtained for Wright et al. 2017 was published by numerous news outlets, and is one of the five iconic images from <i>NuSTAR</i>'s first five years in space. Collaborators: <i>Dr Iain Hannah, Dr Alexander MacKinnon</i>	2014 – 2017

PREVIOUS ACADEMIC APPOINTMENTS (CONT.)	Visiting Researcher, NASA Goddard Space Flight Center (GSFC)	2016
	Heliophysics Science Division	
	<ul style="list-style-type: none"> Explored the possibility of implementing DEM maps in the Helioviewer project, and their usefulness as an input for various established analysis techniques. 	
	Collaborators: <i>Dr Nicholeen Viall, Dr Jack Ireland</i>	
	Research Scholar, Harvard-Smithsonian Center for Astrophysics (CfA)	2013 – 2014
	Solar and Stellar X-Ray Group	
	<ul style="list-style-type: none"> Designed and implemented a sophisticated stellar flare detection routine for long-cadence (30 mins) <i>Kepler</i> data obtained from a proprietary set of spectroscopically verified solar-type stars in three open clusters. A preliminary version of this work had coverage by Science, and The Smithsonian Magazine. 	
	Collaborators: <i>Dr Steven Saar, Dr Søren Meibom, Dr Jeremy Drake, Dr Vinay Kashyap</i>	
	Summer Research Intern, University of Southampton	2013
	Astronomy Group	
	<ul style="list-style-type: none"> Investigated the presence of double blue straggler sequences in globular clusters using Hubble Space Telescope (ACS, WFPC2) data. 	
	Collaborators: <i>Dr Andrea Dieball</i>	
REFEREED JOURNAL PUBLICATIONS	[1] Marsh, A. J., Smith, D. M., Glesener, L. <i>et al</i> 2017. <i>First NuSTAR Limits on Quiet Sun Hard X-Ray Transient Events</i> , ApJ , 849, 131	
	[2] Wang, J., Simões, P. J. A., Jeffrey, N. L. S. <i>et al</i> 2017. <i>Observations of Reconnection Flows in a Flare on The Solar Disk</i> , ApJL , 847, L1	
	[3] Wright, P. J. , Hannah, I. G., Grefenstette, B. W., <i>et al</i> 2017. <i>Microflare Heating of a Solar Active Region Observed with NuSTAR, Hinode/XRT, and SDO/AIA</i> , ApJ , 844, 132	
	[4] Kuhar, M., Krucker, S., Hannah, I. G., <i>et al</i> 2017. <i>Evidence of Significant Energy Input in the Late Phase of a Solar Flare from NuSTAR X-ray Observations</i> , ApJ , 835, 6	
FIRST AUTHOR PUBLICATIONS IN PREPARATION	[5] Wright, P. J. , Hannah, I. G., Viall, N. M., <i>et al</i>	
	[6] Wright, P. J. , Saar, S. H., Meibom, S., <i>et al</i>	
CONFERENCES, WORKSHOPS, & SCHOOLS	Invited Oral Presentations	
	<i>ISSI Team Meeting: Coronal Nanoflares</i> , Bern, CH	2016
	<i>Harvard-Smithsonian Center for Astrophysics</i> , Cambridge, MA, USA	2014
	Oral/ePoster Presentations	
	<i>Solar Physics Division Meeting (SPD/AAS)</i> , Portland, OR, USA	2017
	<i>Coronal Loops Workshop VIII</i> , Palermo, Sicily, IT	2017
	<i>Living with a Star (SDO/LWS) Workshop</i> , Burlington, VT, USA	2016
	<i>Hinode 10</i> , Nagoya, JP	2016
	<i>National Astronomy Meeting 2016</i> , Nottingham, UK	2016
	<i>Hinode 9</i> , Belfast, UK	2015
	<i>Glasgow-Cambridge Flare Workshop</i> , Glasgow, UK	2015
	Poster Presentations	
	<i>European Solar Physics Meeting (ESPM)</i> , Budapest, HU	2017
	<i>Solar Physics Division Meeting (SPD/AAS)</i> , Portland, OR, USA	2017
	<i>Living with a Star (SDO/LWS) Workshop</i> , Burlington, VT, USA	2016
	<i>Coronal Loops Workshop VII</i> , Cambridge, UK	2015
	<i>National Astronomy Meeting (NAM) 2015</i> , Llandudno, UK	2015
	<i>223rd AAS Meeting</i> , National Harbor, MD, USA	2014

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CONFERENCES, WORKSHOPS, & SCHOOLS (CONT.)	Schools Attended	
	<i>CESRA Radio Summer School 2015</i> , Glasgow, UK	2015
	<i>STFC Advanced Summer School in Solar Physics</i> , Dundee, UK	2014
	Conferences/Workshops Attended	
	<i>NuSTAR Heliophysics Workshop (remote participation)</i> , Berkeley, CA, USA	2017
	<i>SUPA Cormack Astronomy Meeting</i> , Edinburgh, UK	2015
	<i>Royal Astronomical Society Discussion Meeting: Results from IRIS</i> , London, UK	2015
	<i>SUPA Cormack Astronomy Meeting</i> , Edinburgh, UK	2014
	<i>1st Space Glasgow Research Conference</i> , Glasgow, UK	2014
AWARDS AND GRANTS	University of Glasgow	
TOTAL: £7000	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
	University of Southampton	
	Research Scholarship	2013
	Summer Studentship Grant	2013
TEACHING	Coursera Inc.	
	“Data Scientists Toolbox” Community Mentor	2017 – present
	An invited mentor of a course in the Data Science specialisation offered by Johns Hopkins University.	
	University of Glasgow	
	Astronomy 1 Tutorial Demonstrator	2016 - 2017
	Supervised students, and marked first-year astronomy problem sets.	
	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.	
	Physics Pre-University Summer School	2015
	Taught at a pre-university school for students entering first year.	
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: <i>New Diagnostics of Particle Acceleration in Solar Coronal Nanoflares from Chromospheric Observations and Modelling</i>	
	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

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SCIENTIFIC	BBC Stargazing Live , Demonstrator	2013
OUTREACH	So'ton Astrodome , Demonstrator	2012
(CONT.)	BBC Bang Goes The Theory Roadshow , Demonstrator	2012
	UK Solar Physics (UKSP) Nuggets , concise, easy-to-read science articles	
	84. The first <i>NuSTAR</i> microflare	2017
	Hinode/XRT Picture of the Week (XPOW)	
	The First Microflare Observations with <i>Hinode</i> /XRT & <i>NuSTAR</i>	2017
PERSONAL PROJECTS	ColourBlind , A repository for colour-blind-friendly colour tables.	
PROFESSIONAL DEVELOPMENT	Coursera, Inc. (MOOC Platform)	
	Using Coursera.org, a massive open online course (MOOC) platform, to take specialisation (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) specialisation providing rigorous training in R.	
	Statistics with R , Duke University	2017 – present
	Four-course (plus capstone) specialisation providing further training in R, with emphasis on statistics.	
TECHNICAL SKILLS:	<i>Computing</i> : IDL, Python, R, Bash, \LaTeX , IRAF, git, GitHub, Microsoft Office, Adobe Creative Cloud, Linux/Unix, Mac OSX, Microsoft Windows,	
	<i>General</i> : Data Analysis, Data Visualisation, Interdisciplinary Collaboration, Public Speaking, Statistics, Teaching, Writing (Technical & Lay)	