

Paul James Wright

CONTACT INFORMATION	— — — — — —, — — — United Kingdom	Mobile: +44 (0)— — — — — Web: www.pauljwright.co.uk Email: paul@pauljwright.co.uk Publication List: SAO/NASA ADS
EDUCATION	University of Glasgow , Glasgow, UK Ph.D. Solar Physics Thesis Title: <i>The Energetics of Small Solar 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) Thesis Title: <i>The Superflare Rates of Solar-Like Stars</i> Advisers: Dr Steven H. Saar, Dr Jeremy J. Drake	10/2014 – 04/2019 10/2010 – 06/2014
CURRENT APPOINTMENTS	Postdoctoral Research Fellow , Stanford University W. W. Hansen Experimental Physics Laboratory Mentor , NASA Frontier Development Lab (FDL) SETI Institute/NASA Ames Research Center, Mountain View, CA Project: <i>Super-resolution magnetograms</i>	06/2019 – 06/2019 –
SELECTED PREVIOUS APPOINTMENTS	Affiliate Staff Member , University of Glasgow • Used 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 to test a variety of coronal analysis techniques. Researcher , NASA Frontier Development Lab (FDL) • Predicted MEGS-A Solar Spectral Irradiance (SSI) with median absolute relative uncertainties of less than 1.6% per emission line using a Convolutional Neural Network (CNN) augmented with a Multi-Layer Perceptron (MLP). • Used a 1x1 CNN to improve the computational speed ($10^3\times$ increase) for differential emission measure (DEM) inversion. Post-Graduate Research Assistant , University of Glasgow • 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. • 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, Spline fitting, and Sparse Inversion (by Basis Pursuit). Visiting Researcher , NASA Goddard Space Flight Center (GSFC) • Explored the possibility of implementing DEM maps in the Helioviewer project, and their usefulness as an input for various established time-series analysis techniques. Research Scholar , Center for Astrophysics Harvard & Smithsonian • 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: this work had coverage by Science and the Smithsonian .	10/2017 – 04/2019 06/2018 - 08/2018 10/2014 – 07/2017 04/2016 10/2013 – 06/2014
MEMBERSHIPS	NuSTAR Heliophysics Working Group , Member Royal Astronomical Society , RAS Fellow International Space Science Institute (ISSI) , Young Scientist Member Member of Paola Testa's ISSI Team: <i>New Diagnostics of Particle Acceleration in Solar Coronal Nanoflares from Chromospheric Observations and Modelling</i>	2015 – present 2014 – present 2015 – 2018

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| 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> , <i>ApJ</i> , 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> , <i>ApJL</i> , 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> , <i>ApJ</i> , 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> , <i>ApJ</i> , 835, 6
[5] Galvez, R., Fouhey, D. F., Jin, M., <i>et al</i> 2019. <i>A Machine Learning Dataset Prepared From the NASA Solar Dynamics Observatory Mission</i> , <i>ApJS</i> , (accepted) |
| BOOK CHAPTERS | [6] Wright, P. J. , Cheung, M. C. M., Thomas, R., <i>et al</i> 2018 <i>DeepEM: A Deep Learning Approach to DEM Inversion</i> . In M. Bobra & J. Mason, eds., <i>Machine Learning, Statistics, and Data Mining for Heliophysics</i> , Chapter 4 |
| FIRST AUTHOR
PUBLICATIONS IN
PREPARATION
(WORKING
TITLES) | [7] Wright, P. J. , Galvez, R., <i>et al</i> 2019. <i>DeepEM: A Deep Learning Approach to DEM Inversion</i>
[8] Wright, P. J. , Hannah, I. G., Viall, N. M., <i>et al</i> 2019. <i>The Thermal Time Evolution of Active Regions Determined by SDO/AIA</i>
[9] Wright, P. J. , Saar, S. H., Meibom, S., <i>et al</i> 2019. <i>The Age-Dependent Superflare Rates of G-Type Dwarfs In Three Kepler Clusters</i> |