

Jack Carlyle

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Astrophysicist working in Solar Physics, specializing in eruptive filaments; experienced in analysing observational data and simulating theoretical models.

Education

PhD in Solar Physics	Mullard Space Science Laboratory, UCL and Max Planck Institute for Solar System Research	2012 – Dec 2015 (expected)
MSci in Astrophysics	University College London	2007 – 2012

Relevant Experience

Student Representative on the UK Solar Physics Council	2013 – present
Student Academic Representative for MSSL	2013 – present
Convener for monthly MSSL Student Talks	2012 – 2013
Student mentor	2010 – 2012

Prizes & Awards

Won “I’m a Scientist, Get Me Out of Here!” outreach competition	November 2015
Chosen for PROBA2 Guest Investigator Program	July 2015
Won The MSSL Alan Johnstone Award for Outstanding Scientific Achievement by a Research Student	November 2014
Awarded BIEP grant to study at Kyoto University	Jan – Feb 2014
Won ‘Best Poster by a Young Scientist’ prize at IAUS300	June 2013

Current work and research interests

My PhD focused on the mass and magnetic field of eruptive solar filaments. Over the course of my research I have helped develop a novel, quasi-spectroscopic technique which uses EUV images to determine hydrogen column density in cool, dense plasma. I have successfully applied this technique to pre- and post-eruption filaments. I have also undertaken numerical magnetohydrodynamic (MHD) simulations in order to investigate the effect of magnetic field strength on plasma instabilities. I hope to continue to investigate the interaction of mass and magnetism in the solar corona.

Skills

One of my biggest strengths is my ability to communicate effectively; I thoroughly enjoy talking about my work at all levels and platforms, and I believe that effective communication is a quintessential part of modern science.

I am very comfortable with many computer systems, and am generally quick to learn new languages and programs. I am good at motivating myself and like to think I am a reliable worker, as well as a friendly, approachable individual.

Publications in peer-reviewed journals

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- J. Carlyle, D. R. Williams, L. van Driel-Gesztelyi, L. Green, G. Valori
Estimating the total mass of an eruptive quiescent filament which led to an unexpectedly geoeffective magnetic storm, 2016
In prep.
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- J. Carlyle, D. Innes, A. Hillier, L. Guo
Nonlinear growth rate of the magnetic Rayleigh-Taylor instability in observations and simulations of erupted filament plasma, 2016
In prep.
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- J. Carlyle, D. R. Williams, L. van Driel-Gesztelyi, D. Innes, A. Hillier, S. Matthews
Investigating the dynamics and density evolution of returning plasma blobs from the 2011 June 7 eruption, 2014
ApJ, **782**, 87 • DOI: 10.1088/0004-637X/781/1/1
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- L. van Driel-Gesztelyi, D. Baker, T. Török, E. Pariat, L. M. Green, D. R. Williams, J. Carlyle, G. Valori, P. Démoulin, B. Kleim, D. M. Long, S. A. Matthews, J. M. Malherbe
Coronal magnetic reconnection driven by CME expansion – the 2011 June 7 event, 2014
ApJ, **788**, 85 • DOI: 10.1088/0004-637X/788/1/85
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- D. Baker, D. H. Brooks, P. Démoulin, L. van Driel-Gesztelyi, L. M. Green, K. Steed, J. Carlyle
Plasma composition in a sigmoidal anemone active region, 2014
ApJ, **778**, 69 • DOI: 10.1088/0004-637X/778/1/69

Publications in conference proceedings

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- J. Carlyle, D. R. Williams, L. van Driel-Gesztelyi, D. Innes
Density evolution of in-falling prominence material from the 7th June 2011 CME, 2014
Proceedings of the IAU, **300**, 401 • DOI: 10.1017/S1743921313011277
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- L. van Driel-Gesztelyi, D. Baker, T. Török, E. Pariat, L. M. Green, D. R. Williams, J. Carlyle, G. Valori, P. Démoulin, S. A. Matthews, B. Kleim, J. M. Malherbe
Magnetic reconnection driven by filament eruption in the 7 June 2011 event, 2014
Proceedings of the IAU, **300**, 502 • DOI: 10.1017/S1743921313011745
-
- D. Baker, D. H. Brooks, P. Démoulin, L. van Driel-Gesztelyi, L. M. Green, K. Steed, J. Carlyle
FIP bias in a sigmoidal active region, 2014
Proceedings of the IAU, **300**, 222 • DOI: 10.1017/S1743921313011009

Professional presentations

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- Seminar presented at Cambridge University Department of Applied Mathematics and Theoretical Physics, UK: The Mass and Magnetic Fields of Eruptive Filaments
19th May 2015
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- Seminar presented at Lancing College, Sussex, UK: Space Weather and Geophysics
14th May 2015
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- Seminar presented at Benenden School, Kent, UK: Space Weather and Geophysics
9th October 2014

Contributed talk at the European Solar Physics Meeting 2014, Dublin, Ireland: Probing the Density and Magnetic Field of Erupted Solar Filament Plasma	11 th September 2014
Seminar presented at HAO, NCAR in Boulder, USA: Probing the Density and Magnetic Field of Erupted Solar Filament Plasma	4 th August 2014
Contributed talk at the National Astronomy Meeting 2014, Portsmouth, UK: Probing the Density and Magnetic Field of Erupted Solar Filament Plasma	23 rd June 2014
Seminar presented at Max Planck Institute for Solar System Research, Göttingen, Germany: Investigating the Density and Magnetic Field of Returning Plasma Blobs from the 2011 June 7 Eruption	28 th May 2014
Contributed talk at eHeroes consortium meeting, Davos, Switzerland: The Dynamics and Density Evolution of Returning Plasma Blobs from the 2011 June 7 Eruption	12 th March 2014
Seminar presented at Kyoto University, Japan: The Dynamics and Density Evolution of Returning Plasma Blobs from the 2011 June 7 Eruption	15 th January 2014
Seminar presented at Orpington Astronomical Society, London, UK: An Introduction to Space Weather and its Effect on Earth	28 th November 2013

Summer Schools attended

The First Solar Orbiter Summer School, L'Aquila, Italy	September 2014
CISM Space Weather Summer School, Boulder, USA	July 2014
LWS Heliophysics Summer School, Boulder, USA	June 2014
eHeroes Summer School, Leuven, Belgium	September 2013
STFC Advanced Solar System Summer School, MSSL, UK	September 2013
STFC Introductory Solar System Summer School, Armagh, UK	September 2012

References

Prof. Lidia van Driel-Gesztelyi Observatoire de Paris LESIA UMR 8109 (CNRS) France lidia.vandriel@obspm.fr	Dr. David R. Williams Mullard Space Science Laboratory, UCL Holmbury St Mary Surrey, RH5 6NT UK d.r.williams@ucl.ac.uk
Dr. Andrew Hillier DAMTP, Centre for Mathematical Sciences University of Cambridge Wilberforce Road Cambridge, CB3 0WA UK ah826@cam.ac.uk	Dr. Davina Innes Max-Planck-Institut für Sonnensystemforschung Justus-von-Liebig-Weg 3 37077 Göttingen Germany innes@mps.mpg.de