Jack Carlyle

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Astrophysicist / Solar Physicist, specialising in eruptive filaments and flares; experienced in observational data analysis and numerical experiments.

Education

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

Experience

Postdoctoral researcher at the University of Oslo, Norway	Jan 2016 – Sept 2016
Student Representative on the UK Solar Physics Council	2013 – 2016
Student Academic Representative for MSSL	2013 – 2015
Convener for monthly MSSL Student Talks	2012 – 2013
Student mentor, UCL	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

I am fascinated by the spectacular activity occurring on the Sun, such as eruptive filaments and flares. My main research interest involves the continual development of a novel technique which utilises multi-wavelength data from many sources in order to determine hydrogen column density in cool, dense plasma, and I primarily use this to investigate the mass of eruptive filaments. In order to then learn about the associated magnetic fields of these filaments and eruptions, I perform MHD numerical experiments of plasma instabilities based on the results of my mass investigation work.
I am also currently working on radiative transfer simulations of solar flares in order to produce a publicly available set of models, as well as using these results to investigate particular formation mechanisms behind emission spectra in flares.

Skills

One of my biggest strengths is my ability to communicate effectively; I thoroughly enjoy talking about my work at all levels and platforms, from papers to presentations to outreach. I believe that effective communication is a quintessential part of modern science, and am always trying to come up with new, innovative ways to transmit ideas across to a broad spectrum of audiences. I am punctual, reliable, and a friendly, approachable individual.

Publications in peer-reviewed journals

J. Carlyle
The Mass and Magnetic Field of Eruptive Solar Filaments, 2016
UCL, PhD Thesis • http://discovery.ucl.ac.uk/1474315/

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

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

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 preparation

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.

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.

Publications in conference proceedings

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

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

Seminar presented at Cambridge University Department of Applied Mathematics and Theoretical Physics, UK: The Mass and Magnetic Fields of Eruptive Filaments — 19th May 2015

Seminar presented at Lancing College, Sussex, UK: Space Weather and Geophysics — 14th May 2015

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	11th September 2014
Seminar presented at HAO, NCAR in Boulder, USA: Probing the Density and Magnetic Field of Erupted Solar Filament Plasma	4th August 2014
Contributed talk at the National Astronomy Meeting 2014, Portsmouth, UK: Probing the Density and Magnetic Field of Erupted Solar Filament Plasma	23rd 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	28th 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	12th March 2014
Seminar presented at Kyoto University, Japan: The Dynamics and Density Evolution of Returning Plasma Blobs from the 2011 June 7 Eruption	15th January 2014
Seminar presented at Orpington Astronomical Society, London, UK: An Introduction to Space Weather and its Effect on Earth	28th November 2013

Summer Schools attended

International School of Space Science, L'Aquila, Italy	June 2016
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
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