

# Jack Carlyle

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jack.carlyle@esa.int



(+44) 7478 596 169

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Astrophysicist / Solar Physicist, specialising in eruptive filaments and flares; experienced in observational data analysis and numerical experiments. Currently employed as a research fellow at ESA/ESTEC, Netherlands, since October 2016.

## Education

PhD in Solar Physics	Mullard Space Science Laboratory, UCL & 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

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J. Carlyle

The Mass and Magnetic Field of Eruptive Solar Filaments, 2016

UCL, PhD Thesis • <http://discovery.ucl.ac.uk/1474315/>

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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

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## Publications in preparation

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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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## 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

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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

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## Professional presentations

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Seminar presented at the Institute of Theoretical Astrophysics, University of Oslo: Mass and Magnetic Field of Eruptive Solar Filaments

22<sup>nd</sup> April 2016

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Contributed talk at the National Astronomy Meeting 2014, Portsmouth, UK: The Mass of Erupting Flux Ropes

9<sup>th</sup> July 2015

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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

19<sup>th</sup> May 2015

Seminar presented at Lancing College, Sussex, UK: Space Weather and Geophysics	14 <sup>th</sup> May 2015
Seminar presented at Benenden School, Kent, UK: Space Weather and Geophysics	9 <sup>th</sup> 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 <sup>th</sup> September 2014
Seminar presented at HAO, NCAR in Boulder, USA: Probing the Density and Magnetic Field of Erupted Solar Filament Plasma	4 <sup>th</sup> August 2014
Contributed talk at the National Astronomy Meeting 2014, Portsmouth, UK: Probing the Density and Magnetic Field of Erupted Solar Filament Plasma	23 <sup>rd</sup> 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 <sup>th</sup> 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 <sup>th</sup> March 2014
Seminar presented at Kyoto University, Japan: The Dynamics and Density Evolution of Returning Plasma Blobs from the 2011 June 7 Eruption	15 <sup>th</sup> January 2014
Seminar presented at Orpington Astronomical Society, London, UK: An Introduction to Space Weather and its Effect on Earth	28 <sup>th</sup> November 2013
<b>Summer Schools attended</b>	
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

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Prof. Lidia van Driel-Gesztelyi  
lidia.vandriel@obspm.fr  
Observatoire de Paris  
LESIA  
UMR 8109 (CNRS)  
France

Dr. David R. Williams  
david.williams@esa.int  
European Space Agency(ESA)  
European Space Astronomy Centre (ESAC)  
E-28692 Madrid  
Spain

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Dr. Andrew Hillier  
ah826@cam.ac.uk  
DAMTP, Centre for Mathematical Sciences  
University of Cambridge  
Wilberforce Road  
Cambridge, CB3 0WA  
UK

Prof. Mats Carlsson  
mats.carlsson@astro.uio.no  
Institute of Theoretical Astrophysics  
University of Oslo  
P.O box 1029, Blindern  
0315 OSLO  
Norway