

School of Physics
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EXPERTISE

Astrophysics:

Terrestrial planet formation, N -body simulations, planetary evolution, planetesimal collisions, SPH modelling, accreting compact binaries, long-slit spectroscopy, radial velocity measurement, data mining, emission line diagnostics, Doppler tomography.

Computing:

Python, C, C-shell scripting, L^AT_EX, Linux/UNIX, Git, HTML, CSS, PHP, SQL, LabVIEW.

APPOINTMENTS

- 2014–Present **Postdoctoral Research Associate**, School of Physics, University of Bristol, UK.
2014 **Early Career Fellow**, Institute of Advanced Study, University of Warwick, UK.

QUALIFICATIONS

- 2010–2014 **PhD** in Physics, University of Warwick, UK.
Thesis title: *Estimating the space density of ultracompact binary stars*
Supervisors: Prof. Tom Marsh, Dr. Danny Steeghs
- 2006–2010 **MPhys** in Physics, University of Warwick, UK. *1st Class Hons*
Research project: *Self-occultation effects in accretion disc spectra*
Supervisor: Prof. Tom Marsh

PUBLICATIONS

- Lines, S.; Leinhardt, Z. M.; Baruteau, C.; Paardekooper, S.-J.; **Carter, P. J.**, *Modelling circumbinary protoplanetary disks: II.*, A&A, 590, A62, doi:10.1051/0004-6361/201628349, 2016.
- Dobinson, J.; Leinhardt, Z. M.; Lines, S.; **Carter, P. J.**; Dodson-Robinson, S. E.; Teanby, N. A., *Hiding in the Shadows II: Collisional Dust as Exoplanet Markers*, ApJ, 820, 29, doi:10.3847/0004-637X/820/1/29, 2016.
- Greiss, S.; Hermes, J. J.; Gänsicke, B. T.; Steeghs, D. T. H.; Bell, Keaton J.; Raddi, R.; Tremblay, P.-E.; Breedt, E.; Ramsay, G.; Koester, D.; **Carter, P. J.**; Vanderbosch, Z.; Winget, D. E. and Winget, K. I., *The search for ZZ Ceti stars in the original Kepler mission*, MNRAS, 457, 2855, doi:10.1093/mnras/stw053 2016.
- Carter, P. J.**; Leinhardt, Z. M.; Elliott, T.; Walter, M. J. and Stewart, S. T., *Compositional evolution during rocky protoplanet accretion*, ApJ, 813, 72, doi:10.1088/0004-637X/813/1/72, 2015.

Lines, S.; Leinhardt, Z. M.; Baruteau, C.; Paardekooper, S.-J.; **Carter, P. J.**, *Modelling circumbinary protoplanetary disks: I. Fluid simulations of the Kepler-16 and 34 systems*, A&A, 582, A5, doi: 10.1051/0004-6361/201526295, 2015.

Leinhardt, Z. M.; Dobinson, J.; **Carter, P. J.** and Lines, S., *Numerically Predicted Indirect Signatures of Terrestrial Planet Formation*, ApJ, 806, 23, doi: 10.1088/0004-637X/806/1/23, 2015.

Bonsor, A.; Leinhardt, Z. M.; **Carter, P. J.**; Elliott, T.; Walter, M. J. and Stewart, S. T., *A Collisional Origin to Earth's Non-chondritic Composition?*, Icarus, 247, 291, doi: 10.1016/j.icarus.2014.10.019, 2015.

Marsh, T. R.; Armstrong, D. J. and **Carter, P. J.**, *KIC 2856960: the impossible triple star*, MNRAS, 445, 309, doi: 10.1093/mnras/stu1733, 2014.

Barentsen, G.; Farnhill, H. J.; Drew, J. E.; González-Solares, E. A.; Greimel, R.; Irwin M. J.; Mizalski, B.; Ruhland, C.; Groot, P.; Mampaso, A.; Sale, S. E.; Henden, A. A.; Aungwerjwit, A.; Barlow, M. J.; **Carter, P. J.**; Corradi, R. L. M.; Drake, J. J.; Eislöffel, J.; Fabregat, J.; Gänsicke, B. T.; Gentile Fusillo, N. P.; Greiss, S.; Hales, A. S.; Hodgkin, S.; Huckvale, L.; Irwin, J.; King, R.; Knigge, C.; Kupfer, T.; Lagadec, E.; Lennon, D. J.; Lewis, J. R.; Mohr-Smith, M.; Morris, R. A. H.; Naylor, T.; Parker, Q. A.; Phillipps, S.; Pyrzas, S.; Raddi, R.; Roelofs, G. H. A.; Rodríguez-Gil, P.; Sabin, L.; Scaringi, S.; Steeghs, D.; Suso, J.; Tata, R.; Unruh, Y. C.; van Roestel, J.; Viironen, K.; Vink, J. S.; Walton, N. A.; Wright, N. J. and Zijlstra, A. A., *The Second Data Release of the INT Photometric H α Survey of the Northern Galactic Plane (IPHAS DR2)*, MNRAS, 444, 3230, doi: 10.1093/mnras/stu1651, 2014.

Carter, P. J.; Gänsicke, B. T.; Steeghs, D.; Marsh, T. R.; Breedt, E.; Kupfer, T.; Gentile Fusillo, N. P.; Groot, P. J. and Nelemans, G., *Two new AM Canum Venaticorum binaries from the Sloan Digital Sky Survey III*, MNRAS, 439, 2848, doi: 10.1093/mnras/stu142, 2014.

Carter, P. J.; Steeghs, D.; Marsh, T. R.; Kupfer, T.; Copperwheat, C. M.; Groot, P. J. and Nelemans, G., *The AM CVn binary SDSS J173047.59+554518.5*, MNRAS, 437, 2894, doi: 10.1093/mnras/stt2103, 2014.

Carter, P. J.; Steeghs, D.; de Miguel, E.; Goff, W.; Koff, R. A.; Krajci, T.; Marsh, T. R.; Gänsicke, B. T.; Breedt, E.; Groot, P. J.; Nelemans, G.; Roelofs, G. H. A.; Rau, A.; Koester, D. and Kupfer, T., *The helium-rich cataclysmic variable SBSS 1108+574*, MNRAS, 431, 372, doi: 10.1093/mnras/stt169, 2013.

Carter, P. J.; Marsh, T. R.; Steeghs, D.; Groot, P. J.; Nelemans, G.; Levitan, D.; Rau, A.; Copperwheat, C. M.; Kupfer, T. and Roelofs, G. H. A., *A search for the hidden population of AM CVn binaries in the Sloan Digital Sky Survey*, MNRAS, 429, 2143, doi: 10.1093/mnras/sts485, 2013.

CONFERENCE PROCEEDINGS

Carter, P. J.; Marsh, T. R.; Steeghs, D.; Breedt, E.; Copperwheat, C. M.; Gänsicke, B. T.; Groot, P. J. and Nelemans, G., “The hidden population of AM CVn binaries in the Sloan Digital Sky Survey,” *The Golden Age of Cataclysmic Variables and Related Objects II*, Acta Polytechnica Proceedings, 2, 178, 2015.

AWARDS

2014 Institute of Advanced Study Early Career Fellowship, University of Warwick.
2010–2014 STFC postgraduate studentship.

TEACHING

- 2014–Present *Lecturer: Current Topics: Exoplanets*, 4th year Physics module, University of Bristol, UK.
- 2010–2014 *Laboratory demonstrator*, 2nd year Physics laboratory, University of Warwick, UK. Demonstrator and marker for physics laboratory on computer control of experiments using LabVIEW. Four hour laboratory sessions once or twice per week.

OUTREACH

- 2015 *Planet formation with a Raspberry Pi*. Member of the team running a computing workshop as part of an increasing participation course *Access to Bristol*.
- 2014 *Computer programming for scientists workshop* for students age 14–15 years. 2 hour workshop giving an introduction to programming and data recording; part of a Smallpeice Trust *Physics in engineering* course held at the University of Warwick.

OBSERVING EXPERIENCE

- 2014 **Successful proposals:** Awarded 12 hours spectroscopy of 6 ultracompact accreting binary systems with FORS2 and XSHOOTER.
- 2010–2014 **Reduction:** Spectroscopic data from a variety of instruments using STARLINK.
- 2011–2013 **Spectroscopy:** *ISIS* on the 4.2 m William Herschel Telescope, La Palma; *AL-FOSC* on the 2.5 m Nordic Optical Telescope, La Palma.
- 2012–2013 **Photometry:** *WFC* on the 2.5 m Isaac Newton Telescope, La Palma.

CONFERENCES AND TALKS

- April 2016 “Compositional evolution of growing terrestrial planet embryos.” Contributed talk at the *UK Community Exoplanet Meeting 2016*, Exeter, UK.
- March 2016 “The effects of collisions and dynamical excitation on the composition of growing terrestrial planet embryos.” Contributed talk at the *47th Lunar and Planetary Science Conference*, The Woodlands, Texas, USA.
- June 2015 “Changing the growing Earth’s composition through collisions.” Poster contribution at *Gordon Research Conference: Origins of Solar Systems*, Mount Holyoke College, USA.
- May 2015 “Changing the growing Earth’s composition through collisions.” Contributed talk at *Exoplanets in Lund 2015*, Lund, Sweden.
- March 2015 “Exoplanet research at the University of Bristol.” Institutional summary at *The UK Community Exoplanet Meeting 2015*, Warwick, UK.
- Oct 2014 “Below the period minimum: a new type of ultracompact binary?” Invited talk at lunch seminar series, University of California, Berkeley, USA.
- Aug 2014 “New results on AM CVn binaries from the SDSS.” Contributed talk at *The 19th European White Dwarf Workshop*, Montréal, Canada.
- Sept 2013 “The hidden population of AM CVn binaries in the Sloan Digital Sky Survey.” Invited talk at *The Golden Age of Cataclysmic Variables and Related Objects II* workshop, Palermo, Sicily.
- July 2013 “A new pathway to AM CVn binaries.” Contributed talk at the *National Astronomy Meeting*, St Andrews, UK.

- April 2012 “The hidden population of AM CVn binaries in the SDSS.” Contributed talk at the *Third International Workshop on AM CVn stars*, Warwick, UK.
- March 2012 “The hidden population of AM CVn binaries in the SDSS.” Contributed talk at the *National Astronomy Meeting*, Manchester, UK.

PEER REVIEW

Reviewer for The Astrophysical Journal, Astronomy & Astrophysics, and Publications of the Astronomical Society of Japan.

PROFESSIONAL SERVICE

- 2014–Present *Astrophysics group seminar organiser*, University of Bristol.
- 2016 *University open days*, School of Physics Department, University of Bristol
Tidal disruption of Shoemaker Levy 9 demonstration and Astrophysics group representative at undergraduate open days.
- 2011–2013 *Departmental open days*, Physics Department, University of Warwick.
Astronomy and Astrophysics group representative at departmental open days/evenings for prospective undergraduate/postgraduate students.

PROFESSIONAL MEMBERSHIPS

Royal Astronomical Society (Fellow).