

George King

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Professional Appointments

Research Assistant

04/2019 to 03/2020

University of Warwick, U.K.

- Postdoctoral position working with Prof. Peter J. Wheatley. Funded as part of the group's STFC consolidated grant. Will be promoted to Research Fellow upon acquisition of my PhD certificate. Predominately finishing off and extending work from my PhD thesis (see below).

Education

PhD in Astrophysics

10/2015 to 10/2019

University of Warwick, U.K.

- Thesis: "*Observations of Exoplanetary Systems at X-ray Wavelengths.*" Supervisor: Prof. Peter J. Wheatley. Submitted May 2019.
- The project looked at various exoplanetary systems in X-ray observations. In analysing data for HD189733, I have played a leading role in the first unambiguous detection of a planet transit in X-rays. Further investigations characterised the X-ray emission from over dozen planet-hosting stars. I used these results to examine the high-energy environments of close-in exoplanets and make inferences about mass loss from their atmospheres.

M.Sci. Physics (International Study) with Honours, Class I

09/2011 to 09/2015

University of Birmingham, U.K.

- M.Sci. Research Project: "*A pipeline to find planets around Kepler red giants.*" Supervisors: Dr Will M. Farr & Dr Ilya Mandel.
- I developed a pipeline for analysing the light curves of *Kepler* red giant stars to search for periodic signals. The pipeline successfully recovered a number of known eclipsing binaries, and identified many more periodic signals that could be followed up and searched for new planets.

Study abroad year

08/2013 to 05/2014

Rutgers University, N.J., USA

- The undertaking of this exchange year tested my ability to adapt to a brand new working environment. Two of the modules I completed provided hands on experience with optical and radio telescopes.

Other Research Experience

Summer Project

08/2014 to 09/2014

School of Physics & Astronomy, University of Birmingham

- Along with a fellow student, I undertook a study of a simulator mimicking potential results from the ESA *PLATO* mission, in conjunction with Dr Andrea Miglio and Prof. Bill Chaplin of the Sun, Stars, and Exoplanets group.

Teaching

Laboratory Demonstrator

10/2015 to 05/2018

Department of Physics, University of Warwick

- First year physics laboratory, led by Dr Tom Hase. Demonstrated mainly astronomy and electronics-based experiments. Led eight students per session through the lab scripts, and marked lab books at the end of the session.
- First year electronics workshop, led by Dr Andy Howes. Led students through the lab scripts, checking issues in built circuits. Marked four lab books per week.

Coadjutant

02/2014 to 04/2014

School of Arts and Sciences, Rutgers University

- Employed as a member of a team of advanced undergraduate and postgraduate students responsible for assisting with the running of the Coursera Massive Open On-line Class *Analyzing the Universe*, led by Prof. Terry Matilsky.

Refereed Publications

First author

- “The XUV irradiation and likely atmospheric escape of the super-Earth π Men c” - **G. W. King**, P. J. Wheatley, V. Bourrier, D. Ehrenreich; MNRAS 484, L49 (2019).
- “The XUV environments of exoplanets from Jupiter-size to super-Earth” - **G. W. King**, P. J. Wheatley, M. Salz, et al.; MNRAS 478, 1193 (2018).

Co-author

- “NGTS-6b: an ultrashort period hot-Jupiter orbiting an old K dwarf” - J. I. Vines, et al.; MNRAS 489 4125 (2019).
- “NGTS-4b: A sub-Neptune Transiting in the Desert” - R. G. West, et al.; MNRAS 486 5094 (2019).
- “K2-265 b: a transiting rocky super-Earth” - K. W. F. Lam, et al.; A&A 620, A77 (2018).
- “An Earth-sized exoplanet with a Mercury-like composition” - A. Santerne, et al., Nature Astronomy 2, 393 (2018).
- “LRG-BEASTS III: ground-based transmission spectrum of the gas giant orbiting the cool dwarf WASP-80” - J. Kirk, et al.; MNRAS 474, 876 (2018).
- “K2-110b: a massive mini-Neptune exoplanet” - H. P. Osborn, et al.; A&A 604, A19 (2017).
- “From dense hot Jupiter to low-density Neptune: The discovery of WASP-127b, WASP-136b, and WASP-138b” - K. W. F. Lam, et al.; A&A 599, A3 (2017).
- “No hydrogen exosphere detected around the super-Earth HD97658 b” - V. Bourrier, D. Ehrenreich, **G. King**, et al.; A&A 597, A26 (2017).

Presentations

Talks

- “XMM-Newton Observations of the HD 189733 System” - Birmingham-Warwick Science Day, Birmingham, May 2018.
- “XMM-Newton Observations of the HD 189733 System” - UK Exoplanet Community Meeting, Oxford, March 2018.
- “The Significance of the TRAPPIST-1 System” - Postgraduate Seminar Series, Warwick, February 2018.
- “X-ray Transit Observations of HD 189733” - Transiting Exoplanets, Keele, July 2017.
- “X-rays in the HD 189733 Planetary System” - Postgraduate Seminar Series, Warwick, April 2017.

Posters

- “XUV Irradiation of Praesepe Planets” - Exoplanets II, Cambridge, July 2018.
- “Exoplanet XUV Environments with XMM-Newton” - UK Exoplanet Community Meeting, St Andrews, March 2017.
- “High-Energy Environments of Close-in Exoplanets” - UK Exoplanet Community Meeting, Exeter, March 2016.

Observing Experience

Spectroscopy

- William Herschel Telescope - ACAM instrument, 1 night, August 2018.

Photometry

- NITES, remote operation, >30 nights, 2017-2019.

Successful Observing Proposals

As PI

- “The X-ray radiation environments of ultra-hot Jupiters” - *XMM-Newton* AO-18, 84 ks (Priority C), 2018.
- “Probing the XUV environments of small, nearby transiting planets” - *XMM-Newton* AO-16, 94 ks (Priority C), 2016.

As Co-I (selection)

- “The LRG-BEASTS programme: Transmission spectroscopy of exoplanets” - William Herschel Telescope (ACAM), Semester 2018B, 6 nights, 2018. PI: Kirk.
- “XUV irradiation of the youngest and nearest transiting super-Earths and Neptunes” - *XMM-Newton* AO-17, 96 ks (Priority C), 2017. PI: Wheatley.
- “Transmission spectroscopy of highly inflated exoplanets” - NTT (EFOSC2), ESO 100A, 3 nights, 2017. PI: Kirk.
- “Transmission spectroscopy of highly inflated exoplanets” - NTT (EFOSC2), ESO 99A, 3 nights, 2016. PI: Kirk.
- “Transmission spectroscopy of highly inflated exoplanets” - William Herschel Telescope (ACAM), Semester 2016B, 6 nights, 2016. PI: Kirk.

Workshops attended

- “Science Communication”, University of Warwick, April 2017.
- “ICIC Data Analysis Workshop”, Imperial College London, September 2016.
- “Team Working in a Research Environment”, University of Warwick, May 2016.

Other Skills & Experience

- Reduction and analysis of observations using various X-ray telescopes: *XMM-Newton*, *ROSAT*, *Swift*, and *Chandra*. Related software: *sas*, *HEASoft* (including extensive knowledge of *Xspec* and *Xselect*), *ciao*.
- *Computing/Programming*: Proficient: Python, \LaTeX , SAOImage DS9, Microsoft Office (and similar packages), Linux-based operating systems. Intermediate: Csh/Bash scripting. Some knowledge: C/C++, Starlink packages.
- Light curve model fitting with MCMC methods (EMCEE).
- LOC member, PLATO Mission Conference 2017: Exoplanetary systems in the PLATO era, University of Warwick, September 2017.
- Organised and chaired the weekly Exoplanet Group meetings at Warwick for two years (2016 to 2018).

- Wrote an article on the *Kepler* mission published in the Fall 2013 edition of *Rutgers Science Review*.

Outreach

Planetarium Assistant

2015 to date

- I have volunteered on over twenty occasions to help run the Warwick Astronomy Group's portable planetarium, including three times for the XMaS Science Gala at Warwick, and a Big Bang event in Leicester.
- This typically involved setting up and dismantling the planetarium and its equipment quickly and safely, as well as presenting/narrating the shows, and giving health and safety talks prior to entry into the planetarium. Audience questions would be taken after the shows.

University of Birmingham Astronomical Society

2011 to 2015

- Being a keen member of AstroSoc enabled me to get involved in the running of various public events, such as a BBC *Stargazing Live* event held at the university in January 2013 and monthly *Astronomy in the City* events that were led by Dr Graham Smith of Astrophysics and Space Research group at Birmingham.
- Duties typically involved setting up and managing observing sessions for the public using the society telescopes and solarscope, assisting in running various activities, and guiding members of the public in finding where events were taking place on campus.

Other Activities

- I regularly play cricket for local club side Massey Ferguson Cricket Club.
- I have acted as team captain for clubs both past and present on numerous occasions for over ten years.