

# Lauren Doyle

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## Professional Appointments

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### Postdoctoral Research Fellow

Apr. 2023 - present

UNIVERSITY OF WARWICK, COVENTRY, UK

- Utilising photometric phase curves to search for non-transiting exoplanets.
- Funded by an STFC Consolidated Grant

### Postdoctoral Research Fellow

Sep. 2020 - Mar. 2023

UNIVERSITY OF WARWICK, COVENTRY, UK

- Using transiting planets to probe and (spectroscopically) resolve stellar surfaces.
- Funded by a UKRI Future Leader Fellowship

## Education

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### PhD in Mathematics

Oct. 2016 - Jul. 2020

NORTHUMBRIA UNIVERSITY · ARMAGH OBSERVATORY AND PLANETARIUM, UK

Supervisor: Dr Gavin Ramsay

Title: Solar and Stellar Flares and Their Connection

- Funded by the Science and Technology Facilities Council
- Thesis Submitted March 2020; Defended May 2020; Graduated July 2020

### MSc (Research) in Physics and Astronomy

Oct. 2015 - Sept. 2016

UNIVERSITY OF GLASGOW, UK

Supervisor: Prof Lyndsay Fletcher

Title: Spectroscopic Studies of Arcade Flares with EIS and EVE

- Thesis Submitted September 2016; Graduated June 2017

### BSc (Hons) in Physics and Astronomy

Sept. 2011 - June 2015

UNIVERSITY OF GLASGOW, UK

## Background & Interests

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My main research interests lie in stellar variability, such as flares and starspots, and the impact they can have on orbiting exoplanet atmospheres and exoplanet detection. I am also interested in the magnetic field structure of flare events and active regions as well as the overall magnetic structure in low mass and solar-type stars. I kick-started my academic career in solar flare research investigating Doppler velocities through spectral analysis in plasma flows from Hinode/EIS and SDO/EVE. I use data from a wide range of instruments both ground and space based including (but not limited to) SST/CRISP, SDO, Hinode/EIS, Kepler/K2, TESS, NGTS, ESPRESSO, SPIRou and NEID.

## Technical Skills

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**Programming** IDL (including SolarSoft)  
MatLab · Python · LaTeX

**Operating Systems** Mac OSX · Linux · Windows

**Practical Skills** Experience using telescope apparatus and various types of software. This includes a 10-day observing run at the Swedish Solar Telescope (SST) in La Palma where I helped to lead spectroscopic observations of various features and phenomena on the solar disk. I also have experience working with solar flare models.

## Awarded Observing Proposals

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**Total of 11 awarded observing proposals: 8 P.I. and 3 Co-I.**

### SELECTED PROPOSALS

- 2023 **57 orbits, 2 targets, CHEOPS, AO-4 (P.I.)**, 'Hidden Gems - Giant Exoplanets around Main-Sequence Stars'
- 2023 **10.5 hours, JWST, Cycle 2 (Co-I)**, 'Testing the C/O Ratio Prediction for Hot Jupiters from Disk-Free Migration'
- 2022 **0.5 nights, Keck-10m, KPF spectrograph (Co-I)**, 'Measuring the First Obliquity of a Hot Jupiter around an M dwarf Star'

- 2022 **8 hours, WIYN-3.5m, NEID spectrograph (P.I.)**, ‘The first spin-orbit alignment of an M dwarf/Brown Dwarf system’
- 2022 **2 nights, CFHT-3.5m, SPIRou NIR spectropolarimeter (P.I.)**, ‘Probing magnetic fields, spot properties and the planetary atmosphere of the WASP-107 system with SPIRou’
- 2022 **28 targets, TESS, 2-min cadence lightcurves, Cycle 5 (P.I.)** ‘Exoplanet Demographics: Transiting planets as probes of stellar variability and planetary architectures’
- 2020 **17 hours, VLT-8m, FORS2 spectropolarimeter (P.I.)** ‘Magnetic Fields on Low Mass Ultra Fast Rotators’

## Publications

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[ADS Personal Library](#) • [Google Scholar](#) • [ORCID ID: 0000-0002-9365-2555](#)

**13 refereed publications: 7 first author, 6 co-author with a total of 203 citations.**

### SELECTED PUBLICATIONS

Doyle L., Armstrong D.J., Bayliss D., Rodel T. and Knovac V., (2023), *The TESS SPOC FFI Target Sample Explored with Gaia*, MNRAS, submitted

Doyle L., Cegla H.M., Anderson D.R., Lendl M., Bourrier V., et al., (2023), *The Bloated Saturn WASP-131 b with ESPRESSO I: Refining the Planetary Architecture and Probing Stellar Differential Rotation*, MNRAS, 522(3), 4499-4514

Doyle L., Cegla H. M., Bryant E., Bayliss D., Lafarga M., et al., (2022b), *The Hot Neptune WASP-166 b with ESPRESSO I: Refining the Planetary Architecture and Stellar Variability*, MNRAS, 516(1), 298-315

Doyle L., Bagnulo S., Ramsay G., Doyle J. G., Hakala P., (2022a), *The puzzling story of flare inactive ultra fast rotating M dwarfs – I. Exploring their magnetic fields*, MNRAS, 512(1), 979–988

Doyle L., Ramsay G., Doyle J. G., (2020), *Superflares and Stellar Variability on Solar-Type Stars Using TESS*, MNRAS, 494 (3), 3596 – 3610

Doyle L., Ramsay G., Doyle J. G., Wu K., Scullion E., (2018), *Investigating the Rotational Phase of Stellar Flares on M dwarfs using K2 Short Cadence Data*, MNRAS, 480, 2153 - 2164

## Conferences, Meetings and Workshops

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### CONFERENCE ORGANISATION

**Royal Astronomical Society, National Astronomy Meeting** Splinter Session Exoplanets 3:

Jul 2022 ‘Understanding Stellar Variability and its Effects on Exoplanet Studies’ – Chair Of Science Organising Committee, Coventry, UK

### ORAL PRESENTATIONS

**Total of 20 oral presentations: including 3 seminars and 4 invited talks.**

Mar 2023 **EPRV 5** Santa Barbara, USA

Sep 2022 **UK Exoplanet Meeting** Edinburgh, UK

May 2022 **Exoplanets IV** Las Vegas, USA

### POSTER PRESENTATIONS

**Total of 7 poster presentations.**

Jul 2022 **Royal Astronomical Society, National Astronomy Meeting** Coventry, UK

Jul 2022 **Cool Stars 21** Toulouse, France

Aug 2021 **TESS Science Conference** USA

### TUTORIALS, WORKSHOPS AND OTHER

**Total of 10 different workshops and tutorials attended.**

Oct 2023 **High Performance Computing at Warwick and Beyond** Warwick, UK

Jun 2022 **Summer School in Astroinformatics II** Penn State, USA

Mar 2022 **Project Management Essentials** Warwick, UK

Mar 2020 **ESO Proposal Writing Workshop** Dublin, Ireland

## Grants/Awards

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Since 2015 I have had many travel and outreach grants which total ~ £8,000.

### SELECTED GRANTS

- Jan 2019 **Institute of Physics Bursary from Plasma Physics Group** £300 travel support to attend the 354th IAU Symposium on Solar and Stellar Magnetic Fields in Copiapo, Chile
- Feb 2019 **International Astronomical Union Travel Grant** €550 travel support to attend the 354th IAU Symposium on Solar and Stellar Magnetic Fields in Copiapo, Chile
- Sep 2021 **NN-Explore Programme** \$5,000 to cover publication costs as part of an observing programme on the WIYN 3.5m.

## Teaching Experience

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- Nov 2023 **Observational Astronomy, Postgraduate Course** Co-lecturing
- Aug 2023 **2nd Year Physics Python Lab** Aided in the development of course for 2023/2024 academic year
- Aug 2023 **MPhys Physics with Astrophysics Project Students** Put forward project on stellar flares

## Outreach

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Communicating my research to the public and inspiring new scientists is something I am very passionate about. During my academic career, I have organised and delivered many large events ranging from public talks to in-school workshops and even co-writing a science activity book. While a postdoctoral researcher at Warwick, I have been worked with many groups across the university including the Physics Department, Warwick Arts Centre, WMG, Chemistry Department and the Warwick Institute of Engagement (WIE).

### SELECTED OUTREACH EVENTS

- June 2023 **The Big Bang Fair** I was supported by Engineering UK at the Big Bang Fair which is hosted yearly at the NEC in Birmingham. This is a massive event where companies and universities come from across the UK to promote STEM careers to Year 6 – 9 pupils. As part of this, I was responsible for organising our stand and managing the staff who would be working. For this event, I was awarded £10k by WIE to purchase our Astro Table which is a touch table running the software 'Stellar Playground' by Clark Planetarium.
- 2022 - present **Slice of Science & Resonate Festival** Slice of Science and Resonate Festival are annual events at the University of Warwick run by the Warwick Institute of Engagement, bringing together many different research groups from across science. As part of these events I have delivered a 30-minute public talk, ran workshops on many of the areas of research within the Astronomy and Astrophysics group, delivered planetarium shows and showcased our Astro Table.
- 2021 - present **Space Camps** Space Camp is an overnight stay at schools in the Sutton Coldfield area for Year 5 pupils to give them an insight into topics related to Space. As part of this, I have volunteered over the past few years to deliver multiple talks at several schools over the month of November on the topic of stars from how they are born to how they die.
- Dec 2022 **Physics Christmas Lecture** I gave the annual University of Warwick public Physics Christmas Lecture in December 2022. This enabled me to develop my public engagement skills further, presenting my research with demonstrations to an audience of 900.
- Jul 2022 **National Astronomy Meeting (NAM)** For NAM 2022 I was responsible for organising and delivering eight fully booked shows in the departments blow-up planetarium for the public Hands on Science workshop. I was also involved in leading one of the morning sessions for Year 5 pupils on the Sun and stars for which I received excellent feedback.

### PLANETARIUM

One of my favourite outreach events is planetarium shows which I have been delivering for over ten years. I am the planetarium coordinator at Warwick where I am responsible for managing the planetarium schedule, volunteers for events and running training sessions. I am also responsible for the planetarium budget, putting together costs for the maintenance and new equipment.

## Other

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- Member of the PLATO Mission Consortium Science Management group for astrophysical noise sources.
- Active member of the Next Generation Transit Survey (NGTS) consortium.