Rose F. P. Waugh

EMAIL: rosefpwaugh@gmail.com WEBSITE: www.rosefpwaugh.com

Teaching and Research Positions

JUN. 2025 - JUN. 2028	**PDRA in Astrophysics and Astronomy** School of Physics and Astronomy, University of St Andrews, Fife, Scotland *PI: Prof. Moira M. Jardine*
MAY. 2024 - MAY. 2025	**Research Fellow in Astrophysics and Astronomy** School of Physics and Astronomy, University of St Andrews, Fife, Scotland *PI: Prof. Moira M. Jardine*
SEP. 2023 - MAY. 2024	**Lecturer** School of Physics and Astronomy, University of St Andrews, Fife, Scotland *Line Manager: Prof. Ian Bonnell*
JUL. 2023 - DEC. 2023	**PDRA in Astrophysics and Astronomy** School of Physics and Astronomy, University of St Andrews, Fife, Scotland *PI: Prof. Moira M. Jardine*

Education

SEP. 2017 - JUN. 2023	**Ph.D. in Astrophysics and Astronomy**, University of St Andrews, Scotland Thesis title: "Prominences: The Phantom Menace" *Supervisor: Prof. Moira M. Jardine*
SEP. 2012 - JUN. 2017	**(1st) MPhys in Theoretical Physics**, University of St Andrews, Scotland Dissertation: "Multi-temperature equilibria for plasma in complex stellar magnetic fields" *Supervisor: Prof. Moira M. Jardine*

Research

To date in my research, I have investigated how common prominences on young, low mass stars might be and the extent to which they may remove mass and angular momentum. Prominences were modelled as stable points within a magnetic field, which could be prescribed as a basic multipole or a field structure generated from Zeeman-Doppler Imaging maps of the stellar surface. In the latter case, the coronal field was constructed using a PFSS model. Prominences were also modelled as cooled flux tubes embedded within a hotter corona. This work predicts prominences to be common on low-mass stars, but that observations will underestimate their masses and frequency due to geometric effects. Despite this, mass and angular momentum loss predictions from this research suggest that prominences could be large contributors to mass loss at some points in their evolution.
In previous projects, I undertook work that determined that prominences could exist within the stellar wind for young, solar-like stars. Here prominences were modelled as mechanical equilibria of cooled hydrostatic magnetic loops, where the coronal magnetic field was prescribed by a multipole that becomes radial beyond a given radius. Two classes of solutions were found: solar-like prominences close to the surface and "slingshot prominences" at greater distances from the surface, including within the stellar wind.

Publications and Peer Review

"Corotating interaction regions (CIRs): impacts with exoplanets", MNRAS, Jul. 2025
"Magnetic confinement of dense plasma inside (and outside) stellar coronae", MNRAS, Jun. 2022
"Slingshot prominences: a hidden mass loss mechanism" MNRAS, Jun. 2021

"Magnetic support of stellar slingshot prominences", MNRAS, Feb. 2019
Articles I have peer reviewed are tracked on Web of Science. ORCID ID: 0000-0002-3000-4788

Books:
"How to become an astrophysicist", Aug. 2022.
"Telescopes". (illustrated children's book), Sep. 2022.

Talks and Conferences

AUG. 2022	IAUGA: Division G (Busan, South Korea)	**Talk:** "Magnetic confinement in the wind of low mass stars"
AUG. 2022	IAUGA: IAUS 370 (Busan, South Korea)	**Talk:** "Stellar prominences as an additional mass loss mechanism to the wind in young stars"
JUL. 2022	NAM (Warwick, UK)	**Poster:** "Magnetic confinement of material around low mass stars"
JUN. 2022	Cool Stars 21 (Toulouse, France)	**Talk:** "Ejected stellar prominences as a stellar mass loss mechanism"
JUN. 2022	Cool Stars 21 (Toulouse, France)	**Poster and flash talk:** "Magnetic confinement of material around low mass stars"
DEC. 2021	Cormack Meeting (Edinburgh, UK)	**Talk:** "Prominences: a stellar mass loss mechanism"
JUN. 2021	CAPS '21 (Birmingham, UK)	**Poster and flash talk:** "Stellar clouds (prominences): hidden mass loss mechanisms?"
JUN. 2021	BCool discussion meetings	Presented research informally
MAR. 2021	Cool Stars 20.5 (Toulouse, France)	**Poster:** "Predicting the mass loss rates of Mdwarfs"
AUG. 2020	RAS ECR poster exhibition	**Poster:** "Supporting stellar clouds within the stellar wind"
MAR. 2020	PhySoc Evening Talks (St Andrews, UK)	**Talk:** Invited Speaker
FEB. 2020	Duncan Institute, (Cupar, UK)	**Public talk:** "Leaving Earth: our next home planet"
DEC. 2019	Cormack Meeting (Edinburgh, UK)	**Poster and flash talk:** "Which stars can host observable prominences?"
OCT. 2019	St Andrews PhD assessment	**Talk**
NOV. 2018	AstroSoc Evening Talks (St Andrews, UK)	**Talk:** Invited Speaker

Prizes and Awards

JUN. 2022	IAU General Assembly Grant - £318
MAY. 2022	Ogden Trust Postgrad Outreach Award 2022
NOV. 2021	Finalist in "Women in STEM award, 2021", SheInspires
AUG. 2020	"PhD Student of the Year, 2020", FindAUniversity
FEB. 2020	Nominated for Equate Student Network "Woman of the Year"
FEB. 2019	CAPOD External Funding Award - £98
SEP. 2017	STFC PhD Funding
JULY 2016	Deans' List

Teaching

2024	Moderating Theoretical Physics, MPhys Project Vivas (PH5103)	University of St Andrews
2024	Astrophysical Plasmas (SUPA course), Lecturing	SUPA
2024	Fluids (PH4031), Lecturing (module coordinator)	University of St Andrews
2024	Astronomy and Astrophysics 2 (PH2001/2101), Lecturing Exoplanets	University of St Andrews
2023	Physics 2A (PH2011), Lecturing Special Relativity	University of St Andrews
2023	Maths for Physicists (PH3081), Tutoring (2 groups)	University of St Andrews
2023	Physics 2A (PH2011), Tutoring (2 groups)	University of St Andrews
2023	Physics 1A (PH1011), Workshops	University of St Andrews
2023	Transferable Skills for Physicists (PH3014), Tutoring (1 group)	University of St Andrews
2022	Tutoring Higher Physics	Freelance
2020	Time Management Workshop for UGs	University of St Andrews
2020	2nd year Astronomy (AS2001/AS2101) Tutorials (cover)	University of St Andrews
2019	2nd year Astronomy (AS2001/AS2101) Tutorials (3 groups)	University of St Andrews
2018	2nd year Astronomy (AS2001/AS2101) Tutorials (2 groups)	University of St Andrews
2018	1st year Astronomy (AS1101) Lab Demonstrating	University of St Andrews
2018	1st year Astronomy (AS1101) Tutorials (2 groups)	University of St Andrews
2018	1st year Astronomy (AS1101) one-on-one tutoring	University of St Andrews
2018	2nd year Astronomy (AS2001/AS2101) Tutorials (2 groups)	University of St Andrews
2017	One-on-one tutoring for Condensed Matter Physics	University of St Andrews
2017	1st year Astronomy (AS1101) Tutorials (1 group)	University of St Andrews

Students supervised

Jun. 2024	Olivia Caruso	Summer student

Resource Creation

APR. - SEP. 2021 **Astrophysics course writer**
Space Science LLC, Delaware, USA

Wrote multiple astrophysics courses for high school students, covering a range of astronomy and astrophysical concepts. This also involved creating quizzes, assessments and cartoon graphics to aid understanding.

MAR. - MAY. 2019 **Resource Designer**
University of St Andrews Admissions and Outreach, Fife, Scotland

Created resources for National 5/Higher mathematics and physics courses for the First Chance Programme. This programme helps students at schools that are disadvantaged or lack resources and permanent teachers. The resources included course notes, worked examples and questions with solutions.

Public Engagement and Outreach

2023 - now	Co-host of an astrophysics podcast.
2018 - now	Running an Instagram account with **over 18K followers** (@astrophysicist_rose).
JAN. 2023	(Virtual) Interview with the Omaha Astronomical Society.
APR. 2022	Scottish heat Runner-up in the IOP 3 Minute Wonder competition.
APR. 2022	Panellist on a series of IOP webinars about PhD study.
JUN. 2021	Judged a science competition, Reinvented Magazine.
JUN. 2021	Guest on the podcast "Science on Trial and Error".
MAY. 2021	Guest on the podcast "Astrophysicast".
MAY. 2021	Guest on the podcast "LASH".
MAY. 2021	Skype interview with high school students, SEK Dublin.
APR. 2021	Guest on the podcast "Keeping up with the Universe".
MAR. 2021	Became a STEM Ambassador.
MAR. 2021	Panel member for "Insight" - Physics UG Podcast.
MAY. 2020	"Physics in the pandemic: 'A lack of childcare hugely reduces productivity'", Physics World.
OCT. 2020	Panel member for PhD Live Study Fair, FindAPhd.
FEB. 2020	Skype interview with high school students, SEK Dublin.
OCT. 2019	Volunteer at "Space and Song" event.
MAR. 2019	University "Science Day" Volunteer.
SEP. 2017	"Explorathon" Volunteer.
JUL. 2016	University "Science Day" Volunteer.

Positions of Responsibility

2018 - 2021	EDI Committee member - PGR Rep. and responsible for maintaining the website (HTML)
2018 - 2019	Postgraduate Rep. for the student physics society
Feb. 2020	Organised a departmental International Day of Women in Science Event
2017 - now	Responsible for maintaining the research group website