

# Rose F. P. Waugh

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## Teaching Positions

<b>SEP. 2023 - JUL. 2024</b>	<b>Lecturer in Astrophysics and Astronomy</b> University of St Andrews, Fife, Scotland
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## Research Positions

<b>JUL. 2023 - DEC. 2023</b>	<b>PDRA in Astrophysics and Astronomy</b> University of St Andrews, Fife, Scotland PI: Prof. Moira M. Jardine
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## Education

<b>SEP. 2017 - JUN. 2023</b>	<b>Ph.D. in Astrophysics and Astronomy</b> University of St Andrews, Fife, Scotland Thesis title: "Prominences: The Phantom Menace" Supervisor: Prof. Moira M. Jardine
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<b>SEP. 2012 - JUN. 2017</b>	<b>(1st) MPhys in Theoretical Physics</b> University of St Andrews, Fife, Scotland Dissertation: "Multi-temperature equilibria for plasma in complex stellar magnetic fields" Supervisor: Prof. Moira M. Jardine Dissertation Grade: 17.3 (80%)
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## Research

During the course of my PhD studies, I investigated how common prominences on young, low mass stars might be and the extent to which they may remove mass and angular momentum. The 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 that 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.

The research of my Masters project determined if prominences could exist within the stellar wind for young, solar-like stars. This work adapted a model from Cartesian into Polar coordinates, in which prominences were modelled as mechanical equilibria of cooled hydrostatic magnetic loops. The coronal magnetic field was prescribed as a dipole, quadrupole or dipole that opens 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. Lifetimes of these prominences were calculated, assuming that material is supplied to the flux tube by an isothermal up-flow, and were consistent with observations for slingshot prominences on the young-sun AB Doradus.

## Publications and Peer Review

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

I think it is important to teach with kindness and curiosity: students have different backgrounds and expectations, but all have something to contribute and should feel welcome and appreciated.

2022	Tutoring Higher Physics	Freelance
2020	Time Management Workshop for UGs	University of St Andrews
2020	AS2001/AS2101 Tutorials (cover)	University of St Andrews
2018/2019	AS2001/AS2101 Tutorials (2/3 groups)	University of St Andrews
2018	AS1101 Lab Demonstrating	University of St Andrews
2018	AS1101 Tutorials (2 groups)	University of St Andrews
2018	AS1101 one-on-one tutoring	University of St Andrews
2018	AS2001/AS2101 Tutorials (2 groups)	University of St Andrews
2017	One-on-one tutoring for Condensed Matter Physics	University of St Andrews
2017	AS1101 Tutorials (1 group)	University of St Andrews

## Resource Creation

- APR. - SEP. 2021 [Space Science LLC](#), Delaware, USA  
Astrophysics course writer  
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 **University of St Andrews Admissions and Outreach**, Fife, Scotland  
Resource Designer  
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

I have participated in a variety of outreach activities because I believe it is important to share our science with the public. Moreover, I have personally benefited from outreach in the past and want to encourage more people of all ages and backgrounds into STEM.

- 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 “Astrophysicist”.](#)
- 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

## Skills

**Programming:** Mathematica, IDL, Fortran

**Other:** Microsoft Office, Overleaf/Latex, Adobe Fresco