

CURRICULUM VITAE

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Holly Preece - Karrengas 48 E, Nijmegen, Netherlands, 6511 GS

RESEARCH INTERESTS

I work on computational stellar evolution of single, binary and higher order multiple systems. My primary area of expertise is tidal dissipation in multiple star systems. During my PhD and first postdoc I developed subroutines to model tidal dissipation in close binary star systems with detailed stellar evolution codes.

Through my study of tidal interactions I have worked with stellar models of all possible masses and at all major evolutionary stages. I have contributed to the fields of convective physics and asteroseismology. Broadly I am interested in physical processes which affect the evolution of the spin of stars and the eccentricity of binary and multiple systems.

EMPLOYMENT

Radboud University <i>Excellence Initiative Fellow</i>	Nijmegen, Netherlands 2023 -
Max Planck Institute for Astrophysics <i>Post-doc in multiple star evolution group</i>	Garching, Germany 2020 - 2023

EDUCATION

Institute of Astronomy, University of Cambridge & Armagh Observatory and Planetarium <i>PhD Astrophysics</i> <i>The effect of tidal interactions on hot subdwarf B stars and their pulsations</i> <i>Supervised by C. A. Tout & C. S. Jefferey</i>	Cambridge/Armagh, UK 2015 - 2019
Royal Holloway, University of London <i>MSci (BSc and Integrated Masters)</i> <i>Physics with Astrophysics - 1st Class Honors</i>	Egham, UK 2011 - 2015

PUBLIC TALKS

Since 2018 I have been exploring the potential of music festivals as a location to conduct scientific outreach. Conventional scientific outreach can sometimes attract those with an existing passion for the subject rather than acting to inspire those that believe science has little to no relevance to their lives. I initially started with small, local events and have progressed to giving lectures and workshops at internationally recognised festivals with multinational line-ups and thousands of attendees from around the globe.

Mo:Dem Festival <i>Two Part Public Lecture Series on Astrophysics</i>	Slunj, Croatia August 2023
Goulash Disko Festival <i>Created and Delivered Interactive Astronomy Installation and Workshop</i>	Komiza, Croatia September 2022
Mo:Dem Festival <i>Two Part Public Lecture Series on Astrophysics</i>	Slunj, Croatia August 2022
Audiogarden - Festival of Music and Arts	Athy, Ireland

Delivered Public Seminar on Tidal Interactions Between Close Binary Stars September 2019

Sunflowerfest - Festival of Music and Arts

Lisburn, Northern Ireland

Delivered Public Seminar on the Role of Women in Astronomy

June 2018

International Women's Day Event - Women in STEM

Armagh, Northern Ireland

Delivered Public Seminar on the Role of Women in Astronomy

March 2018

CONFERENCES AND SEMINARS

Invited Seminars.....

University of Warwick

Coventry, UK

Invited Colloquium

February 2024

Université Libre de Bruxelles

Brussels, Belgium

Invited Colloquium

January 2024

University of Surrey

Guildford, UK

Invited Colloquium

November 2022

Armagh Observatory and Planetarium

Armagh, Northern Ireland

Invited Colloquium

October 2022

Invited Conference Participation.....

CCA Flatiron Institute

New York, USA

Invited Review Talk at Specialist Astrophysics Conference

March 2024

Bamberg Observatory

Bamberg, Germany

Invited Participant at Specialist Workshop

February 2024

EAS 2022 Conference

Valencia, Spain

Invited Review Talk at Specialist Astrophysics Conference

June 2022

Pulsations Workshop

Surrey, UK

Invited Review Talk at Specialist Astrophysics Conference

January 2021

Conference/Workshop Participation.....

sdOB11 Conference

Armagh, UK

Presentation

September 2023

Discussion Session Leader

KAVLI PhD Student Summer School

Garching, Germany

Project Leader

June 2023

MIAPbP Stellar Evolution Workshop

Garching, Germany

Participant

November 2022

STARS2020 Conference

Cambridge, UK

Presentation and Poster at Specialist Astrophysics Conference

August 2022

sdOB10 Conference <i>Presentation & Discussion Session Leader at Astrophysics Conference</i>	Liege, Belgium <i>May 2022</i>
sdOB9 Conference <i>Presentation at Specialist Astrophysics Conference</i>	Hendaye, France <i>June 2019</i>
Hydrogen Deficient Stars IV <i>Presentation at Specialist Astrophysics Conference</i>	Armagh, Northern Ireland <i>September 2018</i>
sdOB8 <i>Presentation at Specialist Astrophysics Conference</i>	Krakow, Poland <i>July 2016</i>
Binary Stars Conference <i>Presentation at Specialist Astrophysics Conference</i>	Cambridge, UK <i>July 2016</i>

Conference Organisation.....

sdOB11 Conference <i>Member of SOC</i>	Armagh, Northern Ireland <i>September 2023 (scheduled)</i>
Hydrogen Deficient Stars IV Conference <i>Member of LOC</i>	Armagh, Northern Ireland <i>September 2018</i>
Binary Stars Conference <i>Member of LOC</i>	Cambridge, UK <i>July 2016</i>

REFEREED ACADEMIC PUBLICATIONS

First Author Papers.....

- **Preece, H. P.**, Hamers, A. S., Battich, T. and Rajamuthukumar A. S., Forming Hot Subluminous Stars from Hierarchical Triples - I. The Role of an Outer Tertiary on Formation Channels, *Monthly Notices of the Royal Astronomical Society*, Accepted for Publication 08/09/2022, ArXiv: 2209.11327
- **Preece, H. P.**, Hamers, A. S., Neunteufel, P. G., Schaefer, A. L., and Tout, C. A. (2022). The Equilibrium Tide: An Updated Prescription for Population Synthesis Codes. *ApJ*, 933(1):25., DOI:10.3847/1538-4357/ac6fe3
- **Preece, H. P.**, Jeffery, C. S and Tout, C. A., (2019). Asteroseismology of tidally distorted sdB stars, *Monthly Notices of the Royal Astronomical Society*, 221 DOI:10.1093/mnras/stz2292.
- **Preece H. P.**, Tout C. A., and Jeffery C. S. (2019). Convection physics and tidal synchronization of the subdwarf binary NY Virginis, *Monthly Notices of the Royal Astronomical Society*, 485:2889-2894., DOI: 10.1093/mnras/stz547
- **Preece H. P.**, Tout C. A., and Jeffery C. S. (2018). Tidal Interactions of Close Hot Subdwarf Binaries., *Monthly Notices of the Royal Astronomical Society*, 481:715–726, DOI: 10.1093/mnras/sty2091

Co-Author Papers.....

- Neunteufel, P., **Preece H.P.**, Kruckow, M., Geier s., Hamers A.s., Justham S., Podsiadlowski Ph., "Properties and applications of a predicted population of runaway He-sdO/B stars ejected from single degenerate He-donor SNe", *Astronomy and Astrophysics*, vol. 663, 2022. DOI:10.1051/0004-6361/202142864.
- Schaefer, A. L., Tremonti, C., Kauffmann, G., Andrews B. H., Bershady M. A., Boardman N.F., Bundy K., Drory N., Fernández-Trincado J.G., **Preece, H.P.**, Riffel R., Riffel R.A., Sánchez S.F., "SDSS-IV MaNGA: Exploring the Local Scaling Relations for N/O", *The Astrophysical Journal*, vol. 930, no. 2, 2022. DOI:10.3847/1538-4357/ac651a.
- Hamers A. S., Rantala A., Neunteufel P., **Preece H.P.**, and Vynatheya P., "Multiple Stellar Evolution: a population synthesis algorithm to model the stellar, binary, and dynamical evolution of multiple-star systems", *Monthly Notices of the Royal Astronomical Society*, vol. 502, no. 3, pp. 4479–4512, 2021. DOI:10.1093/mnras/stab287.
- Izzard Robert G., **Preece H.P.**, Jofre Paula, Halabi Ghina M., Masseron Thomas and Tout Christopher A, (2018), Binary stars in the Galactic thick disc, *Monthly Notices of the Royal Astronomical Society*, 473:2984-2999., DOI: 10.1093/mnras/stx2355.
- Jeffery C. S., Baran A. S., Behara N. T., Kvammen A., Martin P., Naslim N., Østensen R. H, **Preece H. P.**, Reed M. D. and Telting J. H., (2017). Discovery of a variable lead-rich hot subdwarf: UVO 0825+15, *Monthly Notices of the Royal Astronomical Society*, 465:3101-3124, DOI: 10.1093/mnras/stw2852.

TEACHING AND ACADEMIC SERVICES

Student Supervision.....

Project Supervisor <i>Koen Essers, Bachelors Student</i>	Radboud Univeristy, Netherlands 2024
Project Supervisor <i>Abinaya Swaruba Rajamuthukumar, PhD Student</i>	Radboud University, Netherlands 2023/2024
Project Supervisor <i>Amadeo Romagnolo, PhD Student</i>	Radboud University, Netherlands 2023/2024
Project co-Supervisor <i>Ruggero PhD Student</i>	MPA Garching, Germany 2022/2023

Teaching Experience.....

Binary Stars Course <i>Guest Lecturer</i>	Radboud University, Netherlands 2023
Binary Stars Course <i>Guest Lecturer</i>	Technical University Munich, Germany 2023
IMPRS Gravitational Wave Astrophysics <i>Teaching Assisstant</i>	Garching, Germany 2022
IMPRS Astrophysical Dynamics <i>Teaching Assisstant</i>	Garching, Germany 2021
Ia Mathematics for Natural Sciences <i>Supervisor</i>	Cambridge, UK 2015 - 2016

Academic Services.....

Max Planck Institute

Postdoc Representative

Garching, Germany

2020- 2022

Armagh Observatory and Planetarium

Weekly Seminar Organiser

Armagh, Northern Ireland

2018

Armagh Observatory and Planetarium

Regular Outreach Events

Armagh, Northern Ireland

2018

University of Cambridge

Weekly Outreach Events

Cambridge, UK

2015- 2019

Churchill College, University of Cambridge

Committee Roles - Academic Officer, Bar Secretary, LGBTQ+ Representative

Cambridge, UK

2015- 2019