Holly Andrews   **Chalmers University of Technology, Gothenburg, Sweden**
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Research Experience
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2020 – Present   Postdoctoral Researcher   Chalmers University, Sweden
Postdoctoral researcher in the Evolved Stars Group in the Astronomy and Plasma Physics division at Chalmers University of Technology.
- Use of data software packages to reduce sub-mm and radio spectroscopic data from OSO 20m dish, on the yellow hypergiant (YHG) IRC+10420 and the red supergiant (RSG) NML Cyg, and to carry out a comparative analysis of NML Cyg with spectra from HIFI and JCMT to investigate the presence of multiple outflow components.
- Use of interferometric radio observations gathered with ATCA of O/B stars at multiple frequency bands, to help determine constraints on the clumping and mass-loss properties of their stellar winds.

Education

2016 – 2020 PhD in Astrophysics   University College London, UK
Thesis Topic – A Radio Census of the Young Massive Cluster Westerlund 1.
Supervisor: Prof. Raman Prinja
- Reduced and analysed astronomical observations. Datasets included radio observations from ATCA (Australia Telescope Compact Array).
- Data provided information on physical features of stellar winds from a range of spectral types of stars, including source sizes and fluxes, which then led to constraints for mass-loss rates and spectral indices of many of the cluster members.
- Use of multiple data reduction software packages, including CASA, MIRIAD, and AIPS and programming languages, Python and Java.

2012 - 2016 MPhys, Physics with Astrophysics (1st Class)   University of Manchester, UK
Final Year Project: Considering the impact of RFI on LOFAR stations when searching for Lunar-AQN interactions.
Supervisors: Dr Justin Bray, Prof. Anna Scaife
- Final year research project was an investigation into a hypothetical particle known as an AQN (Anti-Quark Nuggets), a possible dark matter candidate, using radio LOFAR data. Practical experiments undertaken through the degree often required quick proficiency with new software.

Summary Internship

June – Sept 2015   CERN – Summer Research Assistant   CERN (Geneva, Switzerland)
Worked in the FATRAS (Fast Atlas Tracking Simulation) group, an ATLAS subgroup. Developed a new macro in Root that enabled improved data compression for the detector material properties. Developed a correction for parameter faults in the simulation geometry of ATLAS, which can also function as a scaling tool to explore hypothetical scenarios.

Observing Experience

2021   IRAM 30m Pooled Observations

2020   ATCA Observations - Two weeks observing for a project for over 20 hours across multiple radio frequency bands.

Supervisor Experience

2021   Masters' Thesis - Supervisor
Project: An Investigation into the Outflows of Massive Evolved Stars using Radiative Transfer Modelling (Student: Per Hirvonen)

2020   Masters' Project Course – Co-Supervisor
Project: The spatial and kinematical structures of detached shells observed with ALMA (Student: Johan Gustafsson)
Project: Dust grains In wind-ISM interaction regions and constraints on the contribution of AGB stars to the total dust budget in galaxies through optical observations (Student: Per Hirvonen)

Teaching Experience

2021   Teaching Assistant   Chalmers University of Technology (Sweden)
Teacher on Masters' level Stellar Physics course. Ran weekly online exercise and problem classes, and provided online assistance and advice for completion of the students on their group coursework.

2017 – 2019 Graduate Teaching Assistant   University College London (London, UK)
Worked as a course demonstrator for 1st year computing and astronomy courses in both the academic years 2017/2018 and 2018/2019.
PHAS0007 Practical Physics and Computing 1:
  - Worked in a team of 4 demonstrators dealing with a group of 60 students, teaching basic proficiency in coding with the use of the programming language Python. Responsible for assessing the in-class completed work at the end of each session, providing clear and concise feedback in both a written and verbal format.

- Demonstrator for the astronomy section of the course at the University College London Observatory, helping familiarise students with the use of Linux and basic astronomical concepts such as folded light curves and magnitudes.

PHAS0003: Practical Astronomy:
- Demonstrator for a first year astronomy course held at the University College London Observatory (UCLO). Responsible for general in-class queries whilst students completed computer exercises using both spectra and photometric data. Taught and assessed students on the safe and proper use of an optical refractor telescope.

Publications

2021   *The molecular content of supergiant outflows (in prep).*
        Andrews, H., De Beck, E.

2019   *A radio census of Westerlund 1,*
        Andrews, H., Fenech, D., Prinja R.K., Clark, J.S., and Hindson, L., A&A 632, A38

2018   *Asymmetric ejecta of cool supergiants and hypergiants in the massive cluster Westerlund 1*, Andrews, H., Fenech, D., Prinja R.K., Clark, J.S., and Hindson, L., MNRAS, 477, L55

2018   *An ALMA 3mm continuum census of Westerlund 1.*
        Fenech, D.M., Clark J.S., Prinja, R.K., Dougherty, S., Najarro F., Negueruela I., Richards A., Ritchie B.W., and Andrews H., A&A, 617 (2018) A137

Conferences and Seminars

June 2021   EAS 2021
                Co-chair of OC for SS8: Welfare and Mental Health in Astronomy
                Member of OC for SS6: Diversity and Inclusion Day

March 2020   ACT Seminar (Chalmers, Sweden)
                Talk: A Radio Census Survey of Westerlund 1

June 2019   EWASS (Lyon, France)
                Talk: A Radio Census Survey of Westerlund 1
                Talk: The YHGs and RSGs of Westerlund 1

November 2017   Radio Stars: From kHz to THz (Haystack Observatory, Massachusetts, US)
                Poster.

July 2017   NAM (Hull, UK)
                Talk: Extended Radio Emission of Cool Hypergiants in Westerlund 1.

June 2015	CAPS (Manchester, UK)
	Organising Committee member that ran the 2015 session of a national student physics conference.

International Schools Attended

May 2018	16th Synthesis Imaging Workshop (Socorro, US)

Outreach

2021	Vetenskapsfestivalen Science Festival – SKA Panel	(Global, via zoom)
2021	Supernova Foundation – Mentor (2 students)	(Global, via zoom)
2020	Vetenskapsfestivalen Science Festival – Public Talk	(Global, via zoom)
2020 – Present	Astronomy on Tap Team Coordinator	(Gothenburg, Sweden)
2020 – Present	Skype a Scientist	(Global, via zoom)
2018 – 2019	ORBYTS Tutor	(Hertfordshire, UK)
2019	Royal Observatory Greenwich – Public Talk	(London, UK)
2019	Diploma Club – Public Talk	(London, UK)
2017	School Tour Team Lead	(UCLO, London, UK)
2016 – Present	Numerous talks given to various schools.	

Additional Roles and Responsibilities

2021 – Present	IAU Junior Member
2020 – Present	Founder and Chair of the Postdoc Representative Committee in SEE department at Chalmers University
2020 - Present	Member of the EAS Inclusion and Diversity WG
2017 – Present	FRAS (Fellow of the Royal Astronomical Society)
2014 – 2016	WISE Society Committee Member (Co-founder, various roles)
2012 – 2016	Undergraduate Physics Society Committee Member (Various roles)

Technical Skills

Software:	CASA, MIRIAD, AIPS, CLASS, DS9, LaTeX, ROOT, SHAPE

Programming Languages: Python (Proficient)

Java, C++, R (Basic)