

# Emily L. Hunt – Curriculum Vitae

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## Research Profile

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Astronomer with interests in machine learning and statistics. Highly skilled programmer with 10+ years of programming experience. During my Ph.D., I used Gaia data and various machine learning techniques to create the largest ever catalogue of star clusters in the Milky Way. I am looking to work on applications of machine learning to large astronomical datasets such as Gaia, Vera Rubin, and JWST surveys.

## Education & Employment

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**2025-2029, Postdoc, University of Vienna, Austria**

**2025-2025, Postdoc, Max Planck Institute for Astronomy, Germany**

**2023-2024, Postdoc, Heidelberg University, Germany**

**Ph.D. 2023, Heidelberg University, Germany**

Thesis: “Improving the census of open clusters in the Milky Way with data from Gaia”

Advisor: S. Reffert

**M.Phys. 2019, University of Bath, United Kingdom**

Thesis: “Inference of photometric galaxy redshifts with a mixture density network”

Advisor: S. Wuyts

## Publications

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ADS search 

First author

4. **Emily L. Hunt**, Tristan Cantat-Gaudin, Friedrich Anders *et al.* (2025). “The completeness of the open cluster census towards the Galactic anticentre”. [A&A, accepted](#)
3. **Emily L. Hunt** and Sabine Reffert (2024). “Improving the open cluster census. III. Using cluster masses, radii, and dynamics to create a cleaned open cluster catalogue”. [A&A, 686, A42](#)  
(70 citations)
2. **Emily L. Hunt** and Sabine Reffert (2023). “Improving the open cluster census. II. An all-sky cluster catalogue with Gaia DR3”. [A&A, 673, A114](#)  
(193 citations)
1. **Emily L. Hunt** and Sabine Reffert (2021). “Improving the open cluster census. I. Comparison of clustering algorithms applied to Gaia DR2 data”. [A&A, 646, A104](#)  
(101 citations)

## Co-author

4. Richard I. Anderson and **Emily L. Hunt** (2025). “A birds-eye view of stellar evolution through populations of variable stars in Galactic open clusters”. *A&A*, submitted
3. Sebastian Ratzenböck, João Alves, **Emily L. Hunt et al.** (2025). “Toward the fabric of the Milky Way: I. The density of disk streams from a local  $250^3$  pc<sup>3</sup> volume”. *A&A*, **694**, A307
2. Dane Spaeth, Sabine Reffert, **Emily L. Hunt et al.** (2024). “Non-radial oscillations mimicking a brown dwarf orbiting the cluster giant NGC 4349 No. 127”. *A&A*, **689**, A91  
(2 citations)
1. Cameren Swiggum *et al.* (incl. **Emily L. Hunt**) (2024). “Most nearby young star clusters formed in three massive complexes”. *Nature*, **661**, 8019, p.49-53  
(11 citations)

## Selected Presentations

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<b>Talk</b> , Bridging Scales – Matera, Italy	(upcoming) 2025
<b>Invited talk</b> , EAS (SS45) – Cork, Ireland	2025
<b>Talk</b> , EAS (S1) – Cork, Ireland	2025
<b>Colloquium</b> – ARI, Heidelberg, Germany	2025
<b>Talk</b> , Heidelberg-Harvard Star Formation Workshop – Heidelberg, Germany	2024
<b>Seminar</b> , Stars seminar – Geneva, Switzerland	2024
<b>Talk</b> , MW Methods Workshop – Ringberg, Germany	2024
<b>Invited review</b> , EAS (SS33) – Padova, Italy	2024
<b>Talk</b> , EAS (S4) – Padova, Italy	2024
<b>Invited talk</b> , SFML2024 – Budapest, Hungary	2024
<b>Colloquium</b> – University of Vienna, Austria	2024
<b>Talk</b> , From star clusters to field populations – Florence, Italy	2023
<b>Seminar</b> , CEFA – Teruel, Spain (online)	2023
<b>Talk</b> , .Astronomy 12 – Flatiron Institute, New York, NY, USA	2023
<b>Colloquium</b> , Königstuhl Colloquium – MPIA, Heidelberg, Germany	2023
<b>Talk</b> , National Astronomy Meeting – Coventry, England, UK	2022
<b>Invited talk</b> , EAS (SS34) – Valencia, Spain	2022
<b>Talk</b> , EAS (SS24) – Valencia, Spain	2022
<b>Talk</b> , EAS (SS15) – Valencia, Spain	2022
<b>Talk</b> , LGBTQ+ STEMinar – University of Glasgow, Scotland, UK	2022
<b>Seminar</b> , Galaxy group – ARI, Heidelberg, Germany	2021
<b>Seminar</b> , Astronomy group – University of Hertfordshire, England, UK	2021
<b>Talk</b> , Star Clusters: The Gaia Revolution	2021
<b>Invited talk</b> , EAS (SS32) – Leiden, Netherlands	2021
<b>Talk</b> , EAS (S15) – Leiden, Netherlands	2021

<b>Seminar</b> , SFB 881 – Heidelberg, Germany	2021
<b>Seminar</b> , Gaia group – University of Vienna, Austria	2021
<b>Seminar</b> , Astronomy group – University of Bath, England, UK	2020
<b>Seminar</b> , Milky Way group – MPA, Heidelberg, Germany	2020

## Open-source software

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**Bluesky Astronomy feeds** – lead developer of **astronomy community feeds** on Bluesky social network, which are used daily by hundreds of astronomers to interact  
**ocelot** – lead developer of an upcoming **star cluster analysis Python package**

## Teaching & Supervision

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<b>Machine learning*</b> , MWGaia Dr. Schl., University of Coimbra, Portugal	2024
<b>Astronomy Lab Course</b> , Heidelberg University	2021
<b>Introduction to Astronomy I</b> , Heidelberg University	2020
<b>Co-supervisor of MSc student</b> , Heidelberg University	2020-2021

\* = as a primary lecturer

## Awards

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<b>Ernst Patzer Award</b> for an excellent publication ( <b>press release</b> )	€2000 – 2023
<b>University of Bath IMI Undergraduate Research Internship</b>	£2000 – 2018

## Selected Outreach

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<b>Invited talk</b> – OUTer SPACE, Max Planck Institute for Astronomy	2023
<b>Interviewed for article</b> – Space.com	2021
<b>Interviewed for article</b> – Thrillist.com	2020
<b>Radio interview</b> – Deutschlandfunk (public radio) & Neue Zürcher Zeitung	2020

## Meeting organization & service

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<b>Co-Chair</b> at EAS 2025: Symposium S3 (Cork, Ireland)	2025
<b>SOC</b> for Roman Galactic Plane Survey Workshop (online)	2025
<b>SOC</b> for .Astronomy 13 (Madrid, Spain)	2024
<b>SOC</b> for .Astronomy 12 (New York, NY, USA)	2023
<b>Reviewer</b> for A&A, AJ, MNRAS	ongoing

## Workshops Attended

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<b>.Astronomy 13</b> – ESAC, Madrid, Spain	2024
<b>.Astronomy 12</b> – Flatiron institute, New York, NY, USA	2023
<b>CZS school on Scientific Machine Learning</b> – Heidelberg, Germany	2023
<b>GaiaUnlimited Community Workshop</b> – Heidelberg, Germany	2022
<b>..Astronomy</b> – online	2020

## Relevant expertise

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### Programming languages

**Python:** expert (e.g. numpy, tensorflow, emcee)  
**JavaScript:** intermediate (Svelte, SvelteKit)  
**C/C++:** intermediate  
**Java:** basic

### Tools and scripting languages

**Git/GitHub:** expert  
**LaTeX:** expert  
**ADQL/SQL:** expert  
**HTML/CSS:** intermediate

### Languages

**English:** native speaker  
**German:** intermediate