

Emily L. Hunt – Curriculum Vitae

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Research Profile

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

2025-29, Postdoc, University of Vienna, Austria

2025-25, Postdoc, Max Planck Institute for Astronomy, Germany

2023-24, 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. Wuys

Publications

ADS search 

First author

5. **Emily L. Hunt**, Tristan Cantat-Gaudin, Friedrich Anders *et al.* (2025). “The selection function of the Gaia DR3 open cluster census”. [Preprint \(submitted to A&A\)](#)
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, 699, A273](#)
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](#)
(107 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](#)
(251 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 \(112 citations\)](#)

Co-author

5. Alexis L. Quintana, **Emily L. Hunt**, and Hanna Parul (2025). “How many stars form in compact clusters in the local Milky Way?”. [A&A, 701, L2](#)
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, 700, L13](#)
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 pc³ 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](#)
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 \(20 citations\)](#)

Selected Presentations

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| Seminar – Lund University, Sweden | (upcoming) 2025 |
| Talk – ADASS, Görlitz, Germany | (upcoming) 2025 |
| Talk , Bridging Scales – Matera, Italy | 2025 |
| Invited talk , EAS (SS45) – Cork, Ireland | 2025 |
| Talk , EAS (S9) – Cork, Ireland | 2025 |
| Talk , EAS (S1) – Cork, Ireland | 2025 |
| Colloquium – ARI, Heidelberg, Germany | 2025 |
| Talk , Heidelberg-Harvard Star Formation Workshop – Heidelberg, Germany | 2024 |
| Seminar , Stars seminar – Geneva, Switzerland | 2024 |
| Talk , MW Methods Workshop – Ringberg, Germany | 2024 |
| Invited review , EAS (SS33) – Padova, Italy | 2024 |
| Talk , EAS (S4) – Padova, Italy | 2024 |
| Invited talk , SFML2024 – Budapest, Hungary | 2024 |
| Colloquium – University of Vienna, Austria | 2024 |
| Talk , From star clusters to field populations – Florence, Italy | 2023 |
| Seminar , CEFCA – Teruel, Spain (online) | 2023 |
| Talk , .Astronomy 12 – Flatiron Institute, New York, NY, USA | 2023 |
| Colloquium , Königstuhl Colloquium – MPIA, Heidelberg, Germany | 2023 |
| Talk , National Astronomy Meeting – Coventry, England, UK | 2022 |
| Invited talk , EAS (SS34) – Valencia, Spain | 2022 |

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| Talk , EAS (SS24) – Valencia, Spain | 2022 |
| Talk , EAS (SS15) – Valencia, Spain | 2022 |
| Talk , LGBTQ+ STEMinar – University of Glasgow, Scotland, UK | 2022 |
| Seminar , Galaxy group – ARI, Heidelberg, Germany | 2021 |
| Seminar , Astronomy group – University of Hertfordshire, England, UK | 2021 |
| Talk , Star Clusters: The Gaia Revolution | 2021 |
| Invited talk , EAS (SS32) – Leiden, Netherlands | 2021 |
| Talk , EAS (S15) – Leiden, Netherlands | 2021 |
| Seminar , SFB 881 – Heidelberg, Germany | 2021 |
| Seminar , Gaia group – University of Vienna, Austria | 2021 |
| Seminar , Astronomy group – University of Bath, England, UK | 2020 |
| Seminar , Milky Way group – MPIA, Heidelberg, Germany | 2020 |

Open-source software

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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| ISM & Star Formation* , University of Vienna | 2025 |
| Machine learning* , MWGaia Dr. Schl., University of Coimbra, Portugal | 2024 |
| Astronomy Lab Course , Heidelberg University | 2021 |
| Introduction to Astronomy I , Heidelberg University | 2020 |
| Co-supervisor of MSc student , Heidelberg University | 2020-2021 |

* = as a primary lecturer

Awards

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

Selected Outreach

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

Meeting organization & service

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| JWST TAC – Cycle 5 External reviewer | (upcoming) 2025 |
| Co-Chair at EAS 2025: Symposium S3 (Cork, Ireland) | 2025 |
| SOC for Roman Galactic Plane Survey Workshop (online) | 2025 |
| SOC for .Astronomy 13 (Madrid, Spain) | 2024 |
| SOC for .Astronomy 12 (New York, NY, USA) | 2023 |
| Reviewer for A&A, ApJ, AJ, MNRAS | ongoing |

Workshops Attended

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

Relevant expertise

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