

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 exciting and challenging data analysis projects.

Employment

2023 – 2024: Postdoctoral researcher, Heidelberg University

Education

2023 – Ph.D. in Astronomy

Heidelberg University, Germany (IMPRS-HD Graduate School)

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

Advisor: S. Reffert

2019 – M.Phys. Physics with Astronomy

University of Bath, United Kingdom

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

Advisor: S. Wuyts

Publications

3. **Hunt, Emily L.** and Reffert, Sabine (in prep.). “Improving the open cluster census. III. The masses and dynamics of open clusters in the Milky Way”.
2. **Hunt, Emily L.** and Reffert, Sabine (2023). “Improving the open cluster census. II. An all-sky cluster catalogue with Gaia DR3”. *A&A*, **673**, A114
1. **Hunt, Emily L.** and Reffert, Sabine (2021). “Improving the open cluster census. I. Comparison of Clustering Algorithms applied to Gaia DR2 Data”. *A&A*, **646**, A104

Selected Presentations

NAM 2022 (Techniques 2) – The power (and caveats) of clustering algorithms with examples from use on Gaia data.

EAS 2022 (SS15) – The open cluster renaissance has only just begun: Exciting new insights from an all-sky Gaia EDR3 cluster census.

EAS 2022 (SS34)* – Name change policies in astronomy journals: How they were achieved and lessons we can learn.

EAS 2022 (SS24) – Approximate Bayesian neural networks with ‘Flipout’ weight perturbations.

LGBTQ+ STEMinar, 2022⁺ – Ancestry in space: Looking for families of stars with machine learning.

Astronomy seminar, University of Hertfordshire, 2021* – An all-sky open cluster census with Gaia EDR3.

Star Clusters: The Gaia Revolution, 2021 – A more complete and accurate open cluster census with Gaia EDR3.

EAS 2021 (S32)* – Uncertainty in machine learning: are Bayesian neural networks viable in 2021?

EAS 2021 (S15) – A more complete and accurate open cluster census with Gaia EDR3.

Gaia group seminar, University of Vienna, 2021* – Searching for open clusters with Gaia.

* = invited; ⁺ = outreach.

Workshops Attended

CZS school on Scientific Machine Learning in Astrophysics, Heidelberg, 2023

GaiaUnlimited Community Workshop, Heidelberg, 2022

dotdotAstronomy, 2022

Awards

University of Bath IMI Undergraduate Research Internship (funded), 2018

Project: De-reddening Cepheid variable stars with a Bayesian inference method

Advisor: V. Scowcroft

Funding: £2000

Teaching

Astronomy Lab Course, Heidelberg University, 2021

Introduction to Astronomy I, Heidelberg University, 2020

Community Service

Conferences and workshops

SOC for .Astronomy 12, New York (2023)

Led session on open cluster selection functions at GaiaUnlimited 2022

Open-source software

Developing a new open cluster analysis Python package for publication in 2023

Developer of [astronomy community feeds](#) on Bluesky social network

Relevant expertise

Programming languages

Python: expert (e.g. numpy, tensorflow, emcee)

C/C++: intermediate

JavaScript: intermediate (Svelte, SvelteKit)

Java: basic

Tools and scripting languages

Git/GitHub: expert

LaTeX: expert

HTML/CSS: intermediate

ADQL/SQL: basic

Languages

English: native speaker

German: intermediate