

# Johanna Hartke | Curriculum Vitae

Finnish Centre for Astronomy with ESO – Quantum, Vesilinnantie 5

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## Research Experience and Employment

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### **Finnish Centre for Astronomy with ESO (FINCA), University of Turku**

*Postdoctoral Fellowship*

*2022–present*

### **European Southern Observatory (Santiago, CL)**

*Postdoctoral Fellowship*

*2018–2022*

○ 2021–2022: secondment to the Sub-department of Astrophysics, University of Oxford

○ 2018–2021: 50% duties as support astronomer & MUSE fellow at Paranal Observatory

### **European Southern Observatory (Garching, DE)**

*PhD Research*

*2015–2018*

*supervised by M. Arnaboldi & O. Gerhard*

Substructures, accretion events, and surrounding diffuse intra-group light in bright early-type galaxies

### **University of Groningen (NL)**

*Master Research*

*2014–2015*

*supervised by E. Tolstoy & S. Jin*

Dynamical modelling of the dwarf spheroidal galaxies Ursa Minor and Draco

### **University of Groningen (NL)**

*Research Project*

*2013–2015*

*supervised by R. Sanderson & A. Helmi*

Using tidal streams to determine the mass distribution of dark halos

### **Jacobs University Bremen (DE) & University of Groningen (NL)**

*Bachelor Research*

*January - May 2013*

*supervised by A. Helmi & J. Vogt*

Fitting orbits to stellar streams in the Aquarius simulation

### **Australian National University (Canberra, AUS)**

*Research Internship*

*July - September 2012*

*supervised by K. C. Freeman*

Dynamics of the Aquarius star stream

## Education

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### **Ludwig-Maximilians-Universität (International Max Planck Research School)**

*PhD, "magna cum laude"*

*2015–2018*

Astronomy

### **University of Groningen**

*Master of Science, "cum laude"*

*2013–2015*

Astronomy

### **Jacobs University Bremen**

*Bachelor of Science, GPA 1.6 (on a 5-point scale with 1 being the highest grade)*

*2010–2013*

Physics

## Languages

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**German:** Native proficiency

**English:** Full professional proficiency

**Dutch:** Elementary proficiency

**French:** Limited working proficiency

**Spanish:** Elementary proficiency

**Finnish:** Basic proficiency

## Computer Skills

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**Programming:** Python (astropy), iraf, C, IDL, Mathematica, html5, SQL

**Pipelines:** ESO reflex, esorex, PampelMUSE, SDFRED (Subaru Telescope), PN.S (William Herschel Telescope), Astromatic software suite

## Observing Experience and Time Allocation

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### Experience

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#### **ESO Very Large Telescope, Chile**

*MUSE Instrument Fellow*

2018–2021

- Support astronomer at UT4 and UT3
- Expert user of MUSE and HAWK-I with the adaptive optics facility, working knowledge of SPHERE and ESPRESSO
- Lead study on AO performance characterisation of MUSE+GALACSI in wide-field mode; selected figures now included in the MUSE user manual
- Member of the MUSE-IRLOS+ upgrade team: responsible for target selection and AO performance evaluation in narrow-field mode, support astronomer during the commissioning runs
- Performed day-time duties for all VLT-I instruments

#### **William Herschel Telescope, Spain**

*Observer*

2017–2019

Expert user of the PN.S visitor instrument, including instrumental set-up, filter tuning, and calibration

### Successful Proposals

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**PI: J. Hartke**

**3 hours**

*MUSE@VLT*

*ESO P108*

VCC 1249: a dwarf elliptical galaxy in the making? The effects of potential shape on tidal stripping

**PI: J. Hartke**

**9 hours**

*MUSE@VLT*

*ESO P108*

Zoom into the first phase of galaxy evolution with MUSE-NFM on the most extreme confirmed relic at  $z > 0.1$ ; partially observed

**ESO-VLT:** Co-I of 250+ hours with FORS2, HAWK-I, and MUSE (including the LEWIS large programme)

**William Herschel Telescope:** Co-I of 20+ nights with AF2-WYFFOS2 (multi-object spectroscopy) and PN.S (slitless spectroscopy)

**Canada-France-Hawaii Telescope (CFHT):** Co-I of 50+ hours with MegaCam (imaging)

**Large Binocular Telescope:** Co-I of 5 hours with MODS (multi-object spectroscopy)

### Membership in Large Collaborations

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#### **LEWIS ESO Large Programme**

*PI: E. Iodice*

2021–present

Looking into the faintEst With muSe (LEWIS): on the nature of ultra-diffuse galaxies in the Hydra-I cluster

Developer of a new MUSE data reduction workflow for ultra-diffuse galaxies

## **INSPIRE ESO Large Programme**

*PI: C. Spiniello*

*2021–present*

INvestigate Stellar Populations in RElics with X-Shooter

Leader of the high-spatial-resolution spectroscopic follow-up with MUSE NFM

## **SIGNALS CFHT Large Programme**

*PI: L. Rousseau-Nepton*

*2021–present*

Star-formation, ionized gas, and nebular abundances legacy survey with SITELLE

Leader of the team working on extragalactic planetary nebulae populations

## **Awards, Scholarships, and Grants**

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### **International Astronomical Union**

*IAU Grant*

*June 2023*

Travel grant to attend IAU Symposium 384

### **Finnish Centre for Astronomy with ESO**

*FINCA mobility grant*

*2023*

Travel grant for a two-week visit to INAF Capodimonte, Naples, Italy

### **Finnish Centre for Astronomy with ESO**

*FINCA visitor grants*

*2023*

Two travel grants to invite Dr. Ennis and Dr. Iodice for one-week stays at the University of Turku

### **German Scholars Organisation**

*Fellowship*

*2022–2023*

Full funding to attend GSO Leadership Academy 6 5-day workshops in Boston and Darmstadt

### **International Astronomical Union**

*IAU Grant*

*October 2016*

Travel grant to attend IAU Symposium 323

### **Studienstiftung des dt. Volkes**

*Scholarship and Grant*

*2011–2015*

German Academic Scholarship Foundation, awarded for academic excellence

### **Jacobs University Bremen**

*President's List Award*

*2012–2013*

Awarded to students with GPA better than 1.5

### **Jacobs University Bremen**

*Scholarship*

*2010–2013*

Entrance scholarship awarded for duration of BSc studies

### **DAAD (German Academic Exchange Service)**

**RISE worldwide internship program**

*Scholarship*

*2012*

Travel and lodging subsidy for internship at Australian National University

## **Teaching and Supervision**

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### **Teaching**

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#### **University of Turku**

**MSc-level lecture and exercise**

*Teaching*

*March 2023*

Spectroscopic diagnostics with Integral Field Units – planetary nebulae as an example

#### **ESO Garching**

**MSc-level lecture**

*Teaching (as part of the Summer Research Programme)*

*July 2022*

Integral-field spectroscopy with VLT-MUSE

## University of Antofagasta

Teaching

3D Spectroscopy and adaptive optics: MUSE+GALACSI at the ESO-VLT

## ESO Vitacura

Teaching

Lecture on “Galaxy haloes”

## ESO Vitacura

Teaching

Lectures on “Loops and Conditionals” & “Plotting with python”

## Jacobs University Bremen

Teaching Assistant

Taught by Prof. Dr. T. Heine, grading of coursework and design and teaching of tutorial sessions

## MSc-level lecture

May 2022

## La Silla Observing School

February 2020

## ESOPy4.0: Python for people in quarantine

April 2020

## General Physics IIB – Modern Physics

Spring Semester 2012

## Supervision

### ESO Garching

MSc student S. Penger (U. Köln)

### ESO Summer Research Programme

July 2022–August 2022

### University of Oxford

BSc student L.S. Guité (U. Montréal)

### Summer Research

May 2022–August 2022

### Paranal Observatory

MSc student A. Cornejo (PUC)

### Paranal Summer Student Internship Programme

January–February 2021

### ESO Vitacura

PhD student A. Ennis (Instituto de Astrofísica de La Plata)

### ESO Studentship

November 2020–October 2021

### ESO Vitacura & La Silla Observatory

Tutoring

Conception and design of the project “Characterising nearby galaxies with photometry” and tutoring of the five PhD-level students during the two-week long school

### La Silla Observing School

February 2020

### Paranal Observatory

BSc/MSc students A. Reyes and C. Moya

### Paranal Summer Student Internship Programme

January–February 2020

### ESO Garching

MSc student V. Comte

### MSc Internship

April–July 2017

## Publications

### Under review

1. Spiniello, C., D’Ago, G., Coccato, L., **Hartke, J.**, et al.: submitted to MNRAS (2023)
2. Simon, D. A., Cappellari, M., **Hartke, J.**: arXiv:2303.18229 (2023)

### In press

3. Iodice, E., Hilker, M., Doll, G., et al.: arXiv e-prints, arXiv:2308.11493 (2023)

### Refereed publications

4. Forbes, D. A., Gannon, J., Iodice, E., et al.: MNRAS, 525, L93 (2023)
5. Pulsoni, C., Gerhard, O., Michael Fall, S., et al.: A&A, 674, A96 (2023)
6. Martín-Navarro, I., Spiniello, C., Tortora, C., et al.: MNRAS, 521, 1408 (2023)
7. D’Ago, G., Spiniello, C., Coccato, L., et al.: A&A, 672, A17 (2023)
8. Bhattacharya, S., Arnaboldi, M., Caldwell, N., et al.: MNRAS, 517, 2343 (2022)
9. Arnaboldi, M., Bhattacharya, S., Gerhard, O., et al.: A&A, 666, A109 (2022)
10. **Hartke, J.**, Arnaboldi, M., Gerhard, O., et al.: A&A, 663, A12 (2022)

11. Gran, F., Zoccali, M., Saviane, I., et al.: MNRAS, 509, 4962 (2022)
12. Bhattacharya, S., Arnaboldi, M., Gerhard, O., et al.: A&A, 647, A130 (2021)
13. **Hartke, J.**, Arnaboldi, M., Gerhard, O., et al.: A&A, 642, A46 (2020)
14. Bhattacharya, S., Arnaboldi, M., Caldwell, N., et al.: A&A, 631, A56 (2019)
15. Bhattacharya, S., Arnaboldi, M., **Hartke, J.**, et al.: A&A, 624, A132 (2019)
16. **Hartke, J.**, Arnaboldi, M., Gerhard, O., et al.: A&A, 616, A123 (2018)
17. **Hartke, J.**, Arnaboldi, M., Longobardi, A., et al.: A&A, 603, A104 (2017)
18. Sanderson, R. E., **Hartke, J.**, Helmi, A.: ApJ, 836, 234 (2017)

### Selected proceedings and other publications.....

19. Veršič, T., Rejkuba, M., Arnaboldi, M., et al.: arXiv e-prints, arXiv:2305.09822 (2023)
20. Wevers, T., Selman, F., Reyes, A., et al.: Proc. SPIE, 12186, 121860T (2022)
21. Ennis, A. I., **Hartke, J.**, Bian, F.: Boletín de la Asociación Argentina de Astronomía La Plata Argentina, 63, 175 (2022)
22. **Hartke, J.**: Joint Observatories Kavli Science Forum in Chile (joksfc2022). Proceedings of the conference held 25-29 April, 13 (2022)
23. **Hartke, J.**, Kakkad, D., Reyes, C., et al.: Proc. SPIE, 11448, 114480V (2020)
24. Pompei, E., **Hartke, J.**, Korhonen, H., et al.: The Messenger, 180, 46 (2020)
25. Sbordone, L., Paladini, C., Antilen, J., et al.: The Astronomer's Telegram, 13525, 1 (2020)
26. Kokotanekova, R., Facchini, S., **Hartke, J.**: The Messenger, 178, 67 (2019)
27. Bhattacharya, S., Arnaboldi, M., **Hartke, J.**, et al.: IAU Symposium, 343, 201 (2019)
28. **Hartke, J.**: Light in the Suburbs: Structure and Chemodynamics of Galaxy Halos, 18 (2019)
29. **Hartke, J.**, Arnaboldi, M., Longobardi, A., et al.: Planetary Nebulae: Multi-Wavelength Probes of Stellar and Galactic Evolution, 323, 293 (2017)
30. Jin, S., Irwin, M., Tolstoy, E., et al.: Multi-Object Spectroscopy in the Next Decade: Big Questions, Large Surveys, and Wide Fields, 507, 241 (2016)
31. Sanderson, R. E., **Hartke, J.**, Helmi, A., et al.: AAS, 225, 119.02 (2015)

### Press releases.....

**October 2020:** Green Light Unveils the Presence of an Old and Metal-Poor Halo in a Giant Elliptical Galaxy, Subaru Telescope and Isaac Newton Group, La Palma

**October 2018:** Three Dynamically Distinct Stellar Populations in the Halo of M49, Isaac Newton Group, La Palma

## Conference contributions and Seminars

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### Upcoming contributions.....

**IAUS 384: Planetary Nebulae**

*Invited talk*

**Krakow, Poland**

*September 2023*

## Scientific talks.....

<b>EAS 2023, S10: The edge of galaxies from field to cluster environment</b> <i>Invited talk</i>	<b>Krakow, Poland</b> <i>July 2023</i>
<b>VEGAS collaboration meeting</b> <i>Invited talk</i>	<b>Pimonte, Italy</b> <i>July 2022</i>
<b>Joint Observatories Kavli Science Forum in Chile</b> <i>Contributed talk, held remotely</i>	<b>Santiago, Chile</b> <i>April 2022</i>
<b>Cosmic nuggets: compact and massive galaxies across the Universe</b> <i>Invited talk, held remotely</i>	<b>Sexten, Italy</b> <i>March 2022</i>
<b>EAS 2021, S11: The outer reaches of galaxies</b> <i>Contributed talk, held remotely</i>	<b>Leiden, The Netherlands</b> <i>June 2021</i>
<b>AO4Astro II</b> <i>Contributed talk, held remotely</i>	<b>Online</b> <i>June 2021</i>
<b>Streams 21: Constraints on Dark Matter</b> <i>Contributed talk, held remotely</i>	<b>Online</b> <i>February 2021</i>
<b>SPiE Astronomical Telescopes + Instrumentation: AO Systems VII</b> <i>Contributed talk, held remotely</i>	<b>San Diego, USA</b> <i>December 2020</i>
<b>XVI SOCHIAS Annual Meeting: The Local Universe</b> <i>Contributed talk, held remotely</i>	<b>Temuco, Chile</b> <i>December 2020</i>
<b>EAS 2020, S11: The Local Group in context</b> <i>Contributed talk, held remotely</i>	<b>Leiden, The Netherlands</b> <i>July 2020</i>
<b>Light in the suburbs: structure and chemodynamics of galaxy halos</b> <i>Contributed talk</i>	<b>Sexten, Italy</b> <i>June 2019</i>
<b>EWASS 2018, SS13: Galaxy clusters and groups across cosmic time</b> <i>Contributed talk</i>	<b>Liverpool, United Kingdom</b> <i>April 2018</i>
<b>4th IMPRS student symposium</b> <i>Contributed talk</i>	<b>Garching, Germany</b> <i>October 2017</i>
<b>MIAPP In &amp; Out. What rules the Galaxy Baryon Cycle?</b> <i>Contributed talk</i>	<b>Garching, Germany</b> <i>July 2017</i>
<b>IAUS 323: Planetary Nebulae</b> <i>Contributed talk</i>	<b>Beijing, China</b> <i>October 2016</i>
<b>2nd IMPRS student symposium</b> <i>Contributed talk</i>	<b>Garching, Germany</b> <i>October 2016</i>

## Seminars and Colloquia.....

<b>FINCA seminar</b> <i>held remotely</i>	<b>Turku, Finland</b> <i>April 2023</i>
<b>Astronomy seminar, University of Helsinki</b>	<b>Helsinki, Finland</b> <i>March 2023</i>
<b>FINCA retreat, University of Turku</b>	<b>Teijo, Finland</b> <i>February 2023</i>
<b>Astronomy seminar, University of Turku</b>	<b>Turku, Finland</b> <i>June 2022</i>

<b>Galaxy dynamics group seminar, University of Vienna</b> <i>held remotely</i>	<b>Vienna, Austria</b> <i>March 2022</i>
<b>SPIMAX Seminar, University of Oxford</b>	<b>Oxford, UK</b> <i>March 2022</i>
<b>Astrophysics Colloquium: Early Career Showcase</b> <i>held remotely</i>	<b>Oxford, UK</b> <i>January 2022</i>
<b>University of Southampton Astronomy Seminar</b>	<b>Southampton, UK</b> <i>December 2021</i>
<b>ESA Science Seminar</b> <i>held remotely</i>	<b>Online</b> <i>July 2021</i>
<b>Galaxy Evolution Seminar, University of Oxford</b> <i>held remotely</i>	<b>Oxford, UK</b> <i>August 2020</i>
<b>DARK Cake Talk, Niels Bohr Institute</b>	<b>Copenhagen, Denmark</b> <i>December 2019</i>
<b>ESO Thirty Minute Talk</b>	<b>Santiago, Chile</b> <i>August 2019</i>
<b>ESO Wine and Cheese Seminar</b>	<b>Garching, Germany</b> <i>July 2019</i>
<b>Lunch Talk, Kapteyn Astronomical Institute</b>	<b>Groningen, The Netherlands</b> <i>July 2019</i>
<b>Astronomy Colloquium, Universidad de Concepción</b>	<b>Concepción, Chile</b> <i>December 2018</i>
<b>Galaxy Cluster Discussion Group</b>	<b>Garching, Germany</b> <i>February 2018</i>
<b>ESO Wine and Cheese Seminar</b>	<b>Garching, Germany</b> <i>January 2018</i>

## Service

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### Review Panels.....

**2019, 2020:** ESO Paranal internship student selection committee

**2019:** ESO Workshop selection committee

### Proposal Review.....

**2021:** Canada-France-Hawaii Telescope external review (Canadian Time Allocation Committee)

**2020-2021:** Hubble Space Telescope external review (galaxies panel)

**2019-2021:** ESO VLT technical feasibility assessment for MUSE

**2019-2021:** ESO Director's Discretionary Time technical review

### Meetings.....

**2022:** LOC & SOC: 4th Wetton workshop, Oxford

**2019-2021:** LOC: Extragalactic spectroscopic surveys: past, present and future of galaxy evolution (GALSPEC2021), Santiago

**2019-2021:** Founder and organiser of the ESO Chile astronomy lecture series

**2016-2018:** ESO students and fellows coffee organiser

**2016:** LOC: 1st IMPRS student symposium, Garching

## Service.....

**2023:** Referee for Astronomy & Astrophysics

**2022–present:** Member of the ESO ELT PSF-R working group

**2022–present:** Member of the MICADO PSF-R working group

**2022–present:** Founder and organiser of the weekly FINCA Turku coffee meetings

**2018–2021:** Member of the MUSE Instrument Operation Team

**2020–2021:** ESO Chile fellow representative

**2015–2018:** IMPRS student representative

**2016:** Scientific Assistant at ESO OPC P98 and P99

## Outreach.....

**2019 – present:** Several popular science talks to diverse levels of audiences

**2019–2022:** ESO Chile outreach volunteer

**2015–2018:** ESO Garching Outreach & Supernova volunteer

**2014–2015:** Volunteer at the Blaauw Sterrenwacht, Groningen

## Professional memberships.....

**2022–present:** European Astronomical Society

**2022–present:** Finnish Astronomical Society

**2021–present:** International Astronomical Union (Junior Member)

## Training and Personal Development

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**2023:** Research Data Management (online course, CSC – Finnish IT center for science)

**2022–2023:** GSO Leadership Academy: two 5-day intensive workshops on leadership, communication, and management practises

**2015–2022:** ESO-provided training and workshops through the students' and fellows' development programme

○ Presentation skills

○ Unconscious bias

○ Fair treatment, courtesy, and respect

○ Science communication

○ Imposter syndrome

○ Conflict management