

# Johanna Hartke | Curriculum Vitae

Finnish Centre for Astronomy with ESO – Quantum, Vesilinnantie 5

20014 University of Turku Finland

✉ johanna.hartke@utu.fi • 🌐 jhartke.github.io • 🆔 0000-0002-8745-689X

## 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

## Publications

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37 publications (7 as first author), of which 19 refereed (4 as first author), *h*-index 10.

A full list of my publications can be found at the end of this CV and at the NASA Astrophysics Data System under [this link](#).

## Observing Experience and Time Allocation

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### Experience.....

#### **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.....

**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)

**AstroSat:** Co-I of 26000s with UVIT (Far-UV imaging)

## Membership in Large Collaborations.....

### 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 SITES

Leader of the team working on extragalactic planetary nebulae populations

## Awards, Scholarships, and Grants

### Finnish Centre for Astronomy with ESO

FINCA visitor grant

2024

Travel grant to invite Dr. Congiu (ESO) to the University of Turku for a one-week stay

### Finnish Centre for Astronomy with ESO

FINCA mobility grant

2024

Travel grant for a 10-day visit to the University of Oxford

### 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

### Teaching

#### University of Turku

Teaching

Optical System Applications: the design of MUSE and GALACSI

**MSc-level lecture**

April 2024

#### University of Turku

Teaching

Data Processing Techniques for Astronomy with ESO Instrumentation: MUSE data reduction and analysis

**MSc-level lecture and exercise**

April 2024

#### University of Turku

Teaching

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

**MSc-level lecture and exercise**

March 2023

#### ESO Garching

Teaching (as part of the Summer Research Programme)

Integral-field spectroscopy with VLT-MUSE

**MSc-level lecture**

July 2022

#### University of Antofagasta

Teaching

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

**MSc-level lecture**

May 2022

#### ESO Vitacura

Teaching

Lecture on “Galaxy haloes”

**La Silla Observing School**

February 2020

#### ESO Vitacura

Teaching

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

**ESOPy4.0: Python for people in quarantine**

April 2020

#### Jacobs University Bremen

Teaching Assistant

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

**General Physics IIB – Modern Physics**

Spring Semester 2012

### Supervision

#### Asiago Observatory

Tutoring

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

**NEON Observing School**

February 2024

#### 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

## Conference contributions and Seminars

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### Scientific talks.....

<b>Vienna ELT Science + Simulations Workshop #1 “First Light”</b> <i>Contributed talk</i>	<b>Vienna, Austria</b> <i>November 2024</i>
<b>EAS 2024, SS7: Unlocking the Secrets of Ultra Diffuse Galaxies</b> <i>Contributed talk</i>	<b>Padova, Italy</b> <i>July 2024</i>
<b>Astronomers’ Days of the Finnish Astronomical Society</b> <i>Contributed talk</i>	<b>Vaasa, Finland</b> <i>May 2024</i>
<b>Tuorla-Tartu Meeting 2024: The borderless Universe</b> <i>Contributed talk</i>	<b>Turku, Finland</b> <i>May 2024</i>
<b>IAUS 384: Planetary Nebulae</b> <i>Invited talk</i>	<b>Krakow, Poland</b> <i>September 2023</i>
<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>

**2nd IMPRS student symposium**

*Contributed talk*

**Garching, Germany**

*October 2016*

**Seminars and Colloquia**

**ESO Wine and Cheese Seminar**

**Garching, Germany**

*June 2024*

**ESO Lunch Talk**

**Garching, Germany**

*June 2024*

**Astronomy and Space Science seminar, University of Oulu**

**Oulu, Finland**

*Januar 2024*

**Astronomy seminar, INAF-OAC**

**Naples, Italy**

*October 2023*

**Galaxies Journal Club, University of Oxford**

**Oxford, UK**

*July 2023*

**FINCA seminar**

*held remotely*

**Turku, Finland**

*April 2023*

**Astronomy seminar, University of Helsinki**

**Helsinki, Finland**

*March 2023*

**FINCA retreat, University of Turku**

**Teijo, Finland**

*February 2023*

**Astronomy seminar, University of Turku**

**Turku, Finland**

*June 2022*

**Galaxy dynamics group seminar, University of Vienna**

*held remotely*

**Vienna, Austria**

*March 2022*

**SPIMAX Seminar, University of Oxford**

**Oxford, UK**

*March 2022*

**Astrophysics Colloquium: Early Career Showcase**

*held remotely*

**Oxford, UK**

*January 2022*

**University of Southampton Astronomy Seminar**

**Southampton, UK**

*December 2021*

**ESA Science Seminar**

*held remotely*

**Online**

*July 2021*

**Galaxy Evolution Seminar, University of Oxford**

*held remotely*

**Oxford, UK**

*August 2020*

**DARK Cake Talk, Niels Bohr Institute**

**Copenhagen, Denmark**

*December 2019*

**ESO Thirty Minute Talk**

**Santiago, Chile**

*August 2019*

**ESO Wine and Cheese Seminar**

**Garching, Germany**

*July 2019*

**Lunch Talk, Kapteyn Astronomical Institute**

**Groningen, The Netherlands**

*July 2019*

**Astronomy Colloquium, Universidad de Concepción**

**Concepción, Chile**

*December 2018*

Galaxy Cluster Discussion Group

Garching, Germany

February 2018

ESO Wine and Cheese Seminar

Garching, Germany

January 2018

## Service

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### Review Panels

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

**2019:** ESO Workshop selection committee

### Proposal Review

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**2023–2024:** ESO OPC Expert Panel Member

**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

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**2023–present:** SOC: Massive Galaxies Across the Universe, Naples, Italy

**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

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**2023–present:** 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

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**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

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**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)

**2024:** JWST Data Masterclass: 2.5-day workshop at ESAC Madrid, Spain

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

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

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|---|-------------------------|
| ○ Presentation skills                   | ○ Science communication |
| ○ Unconscious bias                      | ○ Imposter syndrome     |
| ○ Fair treatment, courtesy, and respect | ○ Conflict management   |

## Full publication list

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### Refereed publications

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1. Scognamiglio, D., Spiniello, C., Radovich, M., et al.: MNRAS, 534, 1597 (2024)
2. Veršič, T., Rejkuba, M., Arnaboldi, M., et al.: A&A, 687, A80 (2024)
3. Maksymowicz-Maciata, M., Spiniello, C., Martín-Navarro, I., et al.: MNRAS, 531, 2864 (2024)
4. Gran, F., Kordopatis, G., Zoccali, M., et al.: A&A, 683, A167 (2024)
5. Spiniello, C., D'Ago, G., Coccato, L., **Hartke, J.**, et al.: MNRAS, 527, 8793 (2024)
6. Simon, D. A., Cappellari, M., **Hartke, J.**: MNRAS, 527, 2341 (2024)
7. Iodice, E., Hilker, M., Doll, G., et al.: A&A, 679, A69 (2023)
8. Forbes, D. A., Gannon, J., Iodice, E., et al.: MNRAS, 525, L93 (2023)
9. Pulsoni, C., Gerhard, O., Michael Fall, S., et al.: A&A, 674, A96 (2023)
10. Martín-Navarro, I., Spiniello, C., Tortora, C., et al.: MNRAS, 521, 1408 (2023)
11. D'Ago, G., Spiniello, C., Coccato, L., et al.: A&A, 672, A17 (2023)
12. Bhattacharya, S., Arnaboldi, M., Caldwell, N., et al.: MNRAS, 517, 2343 (2022)
13. Arnaboldi, M., Bhattacharya, S., Gerhard, O., et al.: A&A, 666, A109 (2022)
14. **Hartke, J.**, Arnaboldi, M., Gerhard, O., et al.: A&A, 663, A12 (2022)
15. Gran, F., Zoccali, M., Saviane, I., et al.: MNRAS, 509, 4962 (2022)
16. Bhattacharya, S., Arnaboldi, M., Gerhard, O., et al.: A&A, 647, A130 (2021)
17. **Hartke, J.**, Arnaboldi, M., Gerhard, O., et al.: A&A, 642, A46 (2020)
18. Bhattacharya, S., Arnaboldi, M., Caldwell, N., et al.: A&A, 631, A56 (2019)
19. Bhattacharya, S., Arnaboldi, M., **Hartke, J.**, et al.: A&A, 624, A132 (2019)
20. **Hartke, J.**, Arnaboldi, M., Gerhard, O., et al.: A&A, 616, A123 (2018)
21. **Hartke, J.**, Arnaboldi, M., Longobardi, A., et al.: A&A, 603, A104 (2017)
22. Sanderson, R. E., **Hartke, J.**, Helmi, A.: ApJ, 836, 234 (2017)

### Proceedings and other publications

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23. **Hartke, J.**, Iodice, E., Doll, G., et al.: EAS2024, 435 (2024)
24. **Hartke, J.**: EAS2024, 230 (2024)
25. **Hartke, J.**: EAS2024, 229 (2024)
26. Sturm, E., Davies, R., Alves, J., et al.: arXiv e-prints, arXiv:2408.16396 (2024)
27. Simioni, M., Jodlbauer, D., Arcidiacono, C., et al.: arXiv e-prints, arXiv:2407.09201 (2024)



28. Grazian, A., Portaluri, E., Simioni, M., et al.: arXiv e-prints, arXiv:2407.09132 (2024)
29. Reguitti, A., Izzo, L., Giudice, I. F., et al.: Transient Name Server AstroNote, 50, 1 (2024)
30. **Hartke, J.**, Arnaboldi, M., Gerhard, O., et al.: arXiv e-prints, arXiv:2312.02587 (2023, Proceedings of IAUS 384)
31. Ennis, A., **Hartke, J.**, Arnaboldi, M., et al.: arXiv e-prints, arXiv:2311.09176 (2023, Proceedings of IAUS 384)
32. Veršič, T., Rejkuba, M., Arnaboldi, M., et al.: arXiv e-prints, arXiv:2305.09822 (2023, Proceedings of IAUS 379)
33. Bhattacharya, S., Arnaboldi, M., Gerhard, O., et al.: arXiv e-prints, arXiv:2305.02761 (2023, Proceedings of IAUS 377)
34. Wevers, T., Selman, F., Reyes, A., et al.: Proc. SPIE, 12186, 121860T (2022)
35. Ennis, A. I., **Hartke, J.**, Bian, F.: Boletín de la Asociación Argentina de Astronomía La Plata Argentina, 63, 175 (2022)
36. **Hartke, J.**: Joint Observatories Kavli Science Forum in Chile (joksfc2022). Proceedings of the conference held 25-29 April, 13 (2022)
37. **Hartke, J.**, Kakkad, D., Reyes, C., et al.: Proc. SPIE, 11448, 114480V (2020)
38. Pompei, E., **Hartke, J.**, Korhonen, H., et al.: The Messenger, 180, 46 (2020)
39. Sbordone, L., Paladini, C., Antilen, J., et al.: The Astronomer's Telegram, 13525, 1 (2020)
40. Kokotanekova, R., Facchini, S., **Hartke, J.**: The Messenger, 178, 67 (2019)
41. Bhattacharya, S., Arnaboldi, M., **Hartke, J.**, et al.: IAU Symposium, 343, 201 (2019)
42. **Hartke, J.**: Light in the Suburbs: Structure and Chemodynamics of Galaxy Halos, 18 (2019)
43. **Hartke, J.**: Ph.D. Thesis, (2018)
44. **Hartke, J.**, Arnaboldi, M., Longobardi, A., et al.: Planetary Nebulae: Multi-Wavelength Probes of Stellar and Galactic Evolution, 323, 293 (2017)
45. 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)
46. 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