Ana María Conrado PhD Candidate in Astrophysics

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Education

2021 – present ★ **Ph.D. Astrophysics, University of Granada** (Granada, Spain)
Thesis title: *The role of low density environment in the SFH of galaxies.* Supervised by Rosa González Delgado (IAA) and Rubén García-Benito (IAA)

2020 – 2021 ★ **M.Sc. Physics and Mathematics, University of Granada** (Granada, Spain). Specialisation in astrophysics
Thesis title: *Dark matter in void galaxies*. Supervised by Isabel Pérez (UGR) and Anne-Marie Weijmands (University of St. Andrews)

2015 – 2020 ★ **B.Sc. Physics, University of Granada** (Granada, Spain)
Thesis title: *Velocity maps and dark matter content of galaxies in voids.* Supervised by Isabel Pérez (UGR) and Rubén García-Benito (IAA)

2017 – 2018 ★ **B.Sc. Physics, Lüdwig-Maximillians University** (Munich, Germany)
ERASMUS exchange

Positions

Sep 2021 – present ★ **PhD in Astrophysics,** Instituto de Astrofísica de Andalucía (Granada, Spain). Supervised by Rosa González Delgado and Rubén García-Benito

Feb – Jun 2024 ★ **Research stay,** ICRAR, International Centre of Radio Astronomy Research (Perth, Australia). Supervised by Aaron Robotham and Luke Davies

Skills

Languages ★ Spanish (mother tongue), English (C1), German (B1), French (A2), Russian (A1)

Coding ★ Python, R, C++, Matlab, Html and Css, Fortran

Operating Systems ★ Linux, MacOs, Windows

Astrophysical data ★ Data: Optical spectroscopy, IFS data, astronomical catalogues, SDSS images.
Visualisation: ds9, python (matplotlib, bokeh, seaborn), R (ggplot2), Matlab
Data analysis: stellar population synthesis (starlight, ProSpect), emission line fitting (shifu), velocity maps and rotation curve fitting (^{3D}barolo, JAM), machine learning and artificial neural networks

HPC ★ GRID, use of the IAA cluster (Spain) and the Setonix supercomputer (Australia)

Others ★ LaTeX, GIMP, Krita, GitHub, Arduino, OpenOffice, Microsoft Office, Ableton Live 12 Suite, FL Studio, GarageBand, Sibelius

Awards and Certifications

Awards and Achievements

2020 – 2025 ★ **FPI predoctoral fellowship**, associated with the project PID2019-109067GB-I00 funded by Spanish Ministry of Science, Education and Universities (MCIN)

Awards and Certifications (continued)

2017 – 2018 ★ **ERASMUS+ grant**, for studying two semesters at Lüdwig-Maximilllians University (Munich, Germany), cofunded by University of Granada, European Comission, Spanish Ministry of Science, Education and Universities and Junta de Andalucía

Certification

2023 ★ **Taekwondo Black Belt**. Awarded by Real Federación Española de Taekwondo

2020 ★ **Goethe-Zertifikat B1**. Awarded by Goethe-Institut e.V.

2014 ★ **ISE II. Level 1 Certificate in ESOL International. B2 of the CERF**. Awarded by Trinity College London

International Research Consortia

2021 – present ★ **WEAVE (WHT Enhanced Area Velocity Explorer).** Member of the WEAVE-Apertif Quality Assurance team (WAQA)

2020 – present ★ **CAVITY (Calar Alto Void Integral-field Treasury surveY).** Member of the Quality Control group

Scientific Production Summary

★ **7** refereed publications ★ h-index **3** ★ **100+** citations ★ Check my articles in ADS

Full article list at the end

International Conferences

- ★ **1st CAVITY Annual Meeting 2021.** Contributed talk: *Dark Matter in CAVITY galaxies*
- ★ **2nd CAVITY annual meeting 2022.** Contributed talk: *Star formation histories of void galaxies*
- ★ **EAS 2022.** Poster presentation: *The role of environment in SF of galaxies*
- ★ **3rd CAVITY annual meeting 2023.** Contributed talk: *Spatially-resolved stellar populations in CAVITY galaxies*
- ★ **EAS 2023.** Poster presentations: *Spatially-resolved stellar population properties in the WEAVE early results* and *Local main sequence in low density environments*
- ★ **4th CAVITY annual meeting 2024.** Contributed talk: *Ionized gas and stellar populations in the CAVITY IFUs*
- ★ **SEA 2024.** Contributed talk: *Spatially-resolved stellar population properties of galaxies in voids with the CAVITY project*

Observational Experience

- ★ **Nordic Optical Telescope** (La Palma, Spain). ALFOSC, long-slit spectroscopy. 3 nights, Dec 2023.

Service Activities

Apr 2024 – present ★ **Equity, diversity and inclusion committee** (IAA-CSIC). Organisation of seminars, round tables, videos, talks and outreach activities for dates as the 11F, 8M, 25N, LGBTQ+ pride day, day of LGBTQ+ people in STEM, day of women engineers. Redaction of the II IAA Equality Plan and assistance to the CSIC research institutes DEI committee meetings.

Jul 2024 ★ **Volunteer XVI SEA Meeting** (Granada, Spain).

Oct 2022 ★ **Volunteer IAA Severo Ochoa Meeting** (Granada, Spain).

Jun 2022 ★ **Volunteer EAS 2022** (Valencia, Spain).

Membership

- ★ **Sociedad Española de Astronomía (SEA)**
- ★ **European Astronomical Society (EAS)**

Software Development

- ★ **PyCASSO:** Adaptation to fit both arms of WEAVE LIFU data cubes with STARLIGHT
- ★ **ProSpect:** Help to adapt ProSpect to fit optical spectra. Inclusion of new stellar libraries (XSL). Development of a pipeline to fit IFU data cubes

Seminars

May 2024 ★ **ICRAR, International Centre of Radio Astronomy Research (ICRAR)** (Perth, Australia)
Spatially-resolved stellar population properties in void galaxies with CAVITY

Courses

Nov 2022 ★ **Multivariate Exploratory Data Analysis (MEDA): Understanding by looking at data.** UGR (Granada, Spain)

Oct 2022 ★ **Course on Scientific Writing.** IAC (La Laguna, Spain)

May 2022 ★ **IAA-CSIC Severo Ochoa Advanced School on Galaxy Evolution.** IAA (Granada, Spain)

Mar 2022 ★ **Taekwondo timekeeper course.** Andalusian taekwondo federation (Sevilla, Spain)

★ **Basic Course on Gender Equality.** Spanish ministry of science and innovation (MCIN)

Nov 2021 ★ **IAA Severo Ochoa Advanced School on Star Formation.** IAA (Granada, Spain)

★ **2nd IAA-CSIC Severo Ochoa School on Statistics, Data Mining, and Machine Learning.** IAA (Granada, Spain)

Sep 2021 ★ **IV edition of the course in communication and scientific outreach.** Desgranando ciencia (Granada, Spain)

Sep 2020 ★ **Using Python for Research.** EdX, Harvard University

Apr 2020 ★ **Machine Learning.** Coursera, Standford University

Outreach

Sep 2024 ★ **European Researchers Night.** *Cosmic workshop: What is the shape of the Universe?*

Outreach (continued)

Jul 2024	**Espacio3.** *Ordering the Universe: From Chaos to Structure*
Sep 2023	**European Researchers Night.** *Cosmic webs and hermit galaxies*
Jun 2023	**ATPATC vol.4.** *What do an Italian and a black hole have in common?*
May 2023	**Pint of Science.** *Space deserts: cosmic voids*
Mar 2023, Feb 2022	**Chat with an astronomer.**
Feb 2023	**Ask an astronomer.**
Sep 2015 – Jun 2017	**JEDA (Junior Empresa de Divulgación).** I have taken part in the following events: • Science Week in the faculty of sciences • Desgranando Ciencia • Open day in Parque de las Ciencias

Research Publications

Journal Articles

1. A. M. Conrado, R. M. González Delgado, R. García-Benito, *et al.*, "The CAVITY project: The spatially resolved stellar population properties of galaxies in voids," *A&A*, vol. 687, A98, Jul. 2024. DOI: 10.1051/0004-6361/202449414. arXiv: 2404.10823 [astro-ph.GA].
2. R. García-Benito, A. Jiménez, L. Sánchez-Menguiano, *et al.*, "CAVITY: Calar Alto Void Integral-field Treasury surveY: I. First public data release," *A&A*, vol. 691, A161, Nov. 2024. DOI: 10.1051/0004-6361/202451400. arXiv: 2410.08265 [astro-ph.GA].
3. S. Jin, S. C. Trager, G. B. Dalton, *et al.*, "The wide-field, multiplexed, spectroscopic facility WEAVE: Survey design, overview, and simulated implementation," *MNRAS*, vol. 530, no. 3, pp. 2688–2730, May 2024. DOI: 10.1093/mnras/stad557. arXiv: 2212.03981 [astro-ph.IM].
4. G. Martínez-Solaeche, R. García-Benito, R. M. González Delgado, *et al.*, "Exploring galaxy properties of eCALIFA with contrastive learning," *A&A*, vol. 688, A160, Aug. 2024. DOI: 10.1051/0004-6361/202450074. arXiv: 2405.13471 [astro-ph.GA].
5. I. Pérez, S. Verley, L. Sánchez-Menguiano, *et al.*, "CAVITY, Calar Alto Void Integral-field Treasury surveY and project extension," *A&A*, vol. 689, A213, Sep. 2024. DOI: 10.1051/0004-6361/202449749. arXiv: 2405.04217 [astro-ph.GA].
6. S. F. Sánchez, R. García-Benito, R. González Delgado, *et al.*, "The CAVITY Project: Spatially-Resolved and Characteristic Properties of Galaxies Derived Using pyPipe3D," *RMxAA*, vol. 60, pp. 323–341, Oct. 2024. DOI: 10.1093/mnras/stad557.
7. G. Torres-Ríos, I. Pérez, S. Verley, *et al.*, "Effect of the local and large-scale environment on the star formation histories of galaxies," *A&A*, vol. 691, A341, Nov. 2024. DOI: 10.1051/0004-6361/202450675.

Conference Proceedings

1. G. Torres-Ríos, I. Pérez, S. Verley, *et al.*, "The effect of local and large scale environment on star formation histories in galaxies," in *EAS2024*, Jul. 2024, p. 1965.