

Pablo Corcho Caballero

Curriculum Vitae

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Research interests

- Galaxy surveys
- Galaxy evolution
- Star formation
- Machine learning
- Cosmological simulations
- Multiwavelength astronomy
- Stellar content
- Galaxy quenching
- Bayesian statistics
- Software development

Education

- 2020–2023 **PhD in Extragalactic Astrophysics (Cotutelle)**, *Universidad Autónoma de Madrid (Spain) & Macquarie University (Australia)*
Thesis: Galactic Ageing and Quenching
Supervisors: Prof. Dr. Yago Ascasibar (UAM), Dr. Ángel R. López-Sánchez (MQU)
Degree awarded with: Cum Laude (UAM), PhD awarded (MQ)
- 2018–2019 **Master of Science (MSc) in Theoretical Physics and Physics of the Cosmos**, *Universidad Autónoma de Madrid (Spain)*
Thesis: The Case against Galaxy Bimodality
Supervisor: Prof. Dr. Yago Ascasibar
Qualification: 9.2/10
- 2014–2018 **Bachelor of Science (BSc) in Physics**, *Universidad Autónoma de Madrid (Spain)*
Thesis: Galactic Ageing
Supervisor: Prof. Dr. Yago Ascasibar
Qualification: 9.6/10

Employment

Astronomy Research

- Oct 2023–
Today **Euclid postdoctoral fellow**, *Kapteyn Astronomical Institute, University of Groningen*, Groningen, Netherlands
Half-time role in quality control of Euclid ancillary data; half-time on independent research in galaxy evolution.

- Feb 2023–
Aug 2023 **AAO-ESO Research Software Developer**, *Australian Astronomical Optics*, Sydney, Australia

Teaching at University level

- 2022–2023 **Physics of Life Sciences (PHYS1210)**, *Macquarie University*, Sydney

Supervising and Mentoring

Since 2021 I have co-supervised 3 BSc. thesis, 2 MSc. thesis, and I am currently co-supervising a PhD. thesis.

PhD. Thesis

2023-present **Anilkumar Mailvaganam**, co-supervised with Dr. T. Zafar and Prof. Dr. S. Ellis, Macquarie University
Thesis title: "The dust content of star-forming galaxies"

MSc. Thesis

2024-2025 **Maria Dziouba**, co-supervised with Prof. Dr. S. Trager, University of Groningen
Thesis title:

2024-2025 **Giacomo Bagnato**, co-supervised with Prof. Dr. G. Verdoes-Kleijn, University of Groningen

BSc. Thesis

2022-2023 **Ángela Abad Martín**, co-supervised with Prof. Dr. Y. Ascasibar, Universidad Autónoma de Madrid
Thesis title: How do galaxies become red?

2022-2023 **Pablo Vega del Castillo**, co-supervised with Prof. Y. Ascasibar, Universidad Autónoma de Madrid
Thesis title: Modelling the emission of hot, warm and cold gas in galaxies.

2021-2022 **Aarón Viangre Maqueda**, co-supervised with Prof. Y. Ascasibar, Universidad Autónoma de Madrid
Thesis title: The star formation rate of dead galaxies.

Publications

A total of 18 papers since 2020 (615 citations, *h*-index: 8).

7 first-author publications.

Full publication list on ADS.

Published articles

1. Euclid Collaboration; Mellier, Y., et al., 2025, A&A, 697, 94
Euclid: I. Overview of the Euclid mission
2. Shoko J. et al., 2024, MNRAS, 530, 2688
The wide-field, multiplexed, spectroscopic facility WEAVE: Survey design, overview, and simulated implementation.
3. Favole G., Ascasibar Y., Gonzalez-Perez V., **Corcho-Caballero P.** et al., 2024, A&A, 683, 38
Characterizing the ELG luminosity functions in the nearby Universe.
4. **Corcho-Caballero P.**, Ascasibar Y., Cortese L., Sánchez S. F., López-Sánchez Á. R., 2023, MNRAS, 524, 3692
Ageing and Quenching through the ageing diagram II: physical characterization of galaxies.
5. **Corcho-Caballero P.**, Ascasibar Y., Sánchez S. F., López-Sánchez Á. R., 2023, MNRAS, 520, 193
Ageing and Quenching through the ageing diagram: predictions from simulations and observational constraints.
6. Capellazzo E. , Zafar T., **Corcho-Caballero P.**, Kann D. A., López-Sánchez Á. R., Ahmad A.,

2022, MNRAS 517, 6022

GRB 180325A: dust grain-size distribution and interstellar iron nanoparticles contribution.

7. Romero, M., **Corcho-Caballero, P.**, Millán-Irigoyen, I., Mollá, M., Ascasibar, Y., 2022, MNRAS in press
Predicting interstellar radiation fields from chemical evolution models.
8. Jiménez-López, D., **Corcho-Caballero, P.**, Zamora, S., Ascasibar, Y., 2022, A&A 662, 17
Polynomial expansion of the star formation history in galaxies.
9. **Corcho-Caballero, P.**, Casado, J., García-Benito, R., Ascasibar, Y., 2021, MNRAS 507, 5477
Galaxy evolution on resolved scales: ageing and quenching in CALIFA.
10. **Corcho-Caballero, P.**, Ascasibar, Y., Scannapieco, C., 2021, MNRAS 506, 5108
Do galaxies die? Different views from simulations and observations in the Local Universe.
11. **Corcho-Caballero, P.**, Ascasibar Y., López-Sánchez Á. R., 2020, MNRAS, 499, 573
A single galaxy population? Statistical evidence that the star-forming main sequence might be the tip of the iceberg.

Submitted articles

1. Euclid Collaboration; Mellier, Y., et al., 2025, A&A, 697, 94
Euclid: I. Overview of the Euclid mission
2. **Corcho-Caballero, P.**; Ascasibar, Y.; and Jiménez-López, D., 2025, submitted to JOSS
The Population Synthesis Toolkit (PST) Python library
3. Euclid Collaboration: **Corcho-Caballero, P.** et al., 2025, submitted to A&A
Euclid Quick Data Release (Q1). A probabilistic classification of quenched galaxies
4. Euclid Collaboration: Enia, A. et al., 2025, submitted to A&A
Euclid Quick Data Release (Q1). A first view of the star-forming main sequence in the Euclid Deep Fields
5. Euclid Collaboration: Cleland, C. et al., 2025, submitted to A&A
Euclid Quick Data Release (Q1): The evolution of the passive-density and morphology-density relations between $z=0.25$ and $z=1$
6. Euclid Collaboration: Aussel, H. et al., 2025, submitted to A&A
Euclid Quick Data Release (Q1) – Data release overview
7. Nagam B. et al., 2025, submitted to A&A
Euclid: Finding strong gravitational lenses in the Early Release Observations using convolutional neural networks

Congresses, seminars, and talks

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|---------------|---|
| June, 2025 | Talk , <i>European Astronomical Society (EAS) Annual Meeting</i> , Cork, Ireland
Title: "Euclid's view on galaxy quenching" |
| May 2025 | Talk , <i>80th Netherlands Astronomers' Conference (NAC)</i> , Berg en Dal, Netherlands
Title: "Euclid's view on galaxy quenching" |
| November 2024 | Talk , <i>Astronomical Data Analysis Software & Systems (ADASS) XXXIV</i> , Valleta, Malta
Title: "The PyKOALA python library: A multi-instrument package for IFS data reduction" |
| July 2024 | Talk , <i>XVI Scientific Meeting of the Spanish Astronomical Society (SEA)</i> , Granada, Spain
Title: "Ageing and Quenching in the Local Universe" |

- January 2024 **Talk**, *Euclid Galaxy Evolution Science Working Group meeting*, Bologna, Italy
Title: "The fate of low-mass galaxies: Euclid's view on galaxy quenching"
- July 2023 **Talk**, *ACAMAR 9 workshop*, Perth, Australia
Title: "Galactic Ageing and Quenching" ("**Highly commended talk**" price)
- June 2023 **Talk**, *Astronomical Society of Australia meeting*, Sydney, Australia
Title: "Ageing and Quenching in the Local Universe"
- February 2023 **Seminar**, *Macquarie University (MQ)*, Sydney, Australia
Title: "Galactic Ageing and Quenching"
- February 2023 **Seminar**, *Australian National University (ANU)*, Canberra, Australia
Title: "Galactic Ageing and Quenching"
- November 2023 **Seminar**, *International Centre for Radio Astronomy Research (ICRAR)*, Perth, Australia
Title: "Ageing and Quenching in the Local Universe"
- September 2022 **Talk**, *ASTRO3D NSW Node Meeting*, Sydney, Australia
Title: "Galactic Ageing and Quenching"
- May 2022 **Talk**, *ASTRO3D Science Meeting*, Melbourne, Australia
Title: "Ageing and Quenching in the Local Universe"
- May 2022 **Talk**, *XIII Estallidos workshop – Starburst along the life of the Universe*, Madrid, Spain
Title: "Galactic Ageing"
- September 2021 **Seminar**, *Instituto de Astrofísica de Canarias (IAC)*, Tenerife, Spain
Title: "Galactic Ageing"
- July 2020 **Talk**, *XIV.0 Scientific Meeting (virtual) of the Spanish Astronomical Society*, Virtual
"A single galaxy population? Statistical evidence that the Star-Forming Main Sequence might be the tip of the iceberg"
- October 2019 **Talk**, *XII workshop Estallidos – Starbursts in galaxies: From PhD students to international partners*, Almería, Spain
Title: "The fundamental distribution of galaxies"
- July 2018 **Attendance**, *XIII Scientific Meeting of the Spanish Astronomical Society (SEA)*, Salamanca, Spain
- May 2018 **Attendance**, *XI workshop ESTALLIDOS in motion: Bringing the kinematics into the picture*, Madrid, Spain

Software and pipelines

Programming languages and systems

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|------------------------|------------------------|
| ○ Python (proficient) | ○ Bash (intermediate) |
| ○ Julia (intermediate) | ○ C/C++ (intermediate) |
| ○ git (high) | ○ Latex (high) |
| ○ SQL (basic) | ○ Linux (advanced) |

Data Reduction and quality control

- ADARI European Southern Observatory quality control pipeline (developer).

PYKOALA A Multi-instrument tool for reducing IFS data (lead developer).
 PY2DFDR Python wrapper of 2DFDR AAT data reduction pipeline (lead developer).
 EQUAL EXT-Quality-Assurance-Tools (lead developer).
Modelling
 PST Population synthesis toolkit (lead developer).
 BESTA Bayesian Estimator for Stellar Population Analysis (lead developer).
 Other SPS PIPE3D, GIST, PROSPECTOR (user).
Codes
 MIDAS Modelling IFS DatacubeS (lead developer).
 Radiative SKIRT, MIXCLASK (developer).
 Transfer

Grants and awards

2024 Leids Kerkhoven-Bosscha (LKBF) Funds, University of Groningen, Groningen, Netherlands. Amount: ~ €750
 2024 Leids Kerkhoven-Bosscha (LKBF) Funds, University of Groningen, Groningen, Netherlands. Amount: ~ €600
 2022-2023 Post-Graduate Research Fund (PGRF), Macquarie University, Sydney, Australia. Amount: ~ 3000 \$AUD
 2021-2023 Cotutelle IMQRES Scholarship, Macquarie University, Sydney, Australia. Amount: Tuition fees and monthly stipend (~ 160.000 \$AUD)
 2018-2019 MEC Scholarship for Master studies, Spanish Ministry of Education. Amount: Tuition fees and extra budget (~ 4.000 €)
 2014-2018 MEC Scholarship for Undergraduate studies, Spanish Ministry of Education. Amount: Tuition fees and extra budget (~ 3.000 €/year)

Observational Experience

Imaging **CAFOS@2.2m**, *Calar Alto Observatory*, Almería, Spain
 4 nights.
 Imaging **ASI1600@TJM0.5m (Telescopio Jerónimo Muñoz)**, *Observatorio Astronómico UAM*, Madrid, Spain
 Observations and maintenance.
 IFS **KOALA-IFU@AAT3.9m (Anglo Australia Telescope)**, *Siding Spring Observatory*, Coonabarabran, Australia
 Spectroscopy ~20 nights.
 IFS **Hector-MIFU@3.9m (AAT)**, *Siding Spring Observatory*, Coonabarabran, Australia,
 Spectroscopy ~8 nights.

Membership and collaborations

Societies

SEA	Spanish Astronomical Society	<i>Since 2019</i>
ASA	Astronomical Society of Australia	<i>Since 2022</i>
SRAP	Spanish Researchers in Australia-Pacific	<i>Since 2022</i>
	<u>Research groups</u>	
ASTRO3D	ARC Centre of Excellence for All Sky Astrophysics in 3 Dimensions	<i>Since 2022</i>
ESTALLIDOS	Spanish national project	<i>Since 2018</i>
NOVA	Netherlands Research School for Astronomy	<i>Since 2023</i>
	<u>Surveys and missions</u>	
HI-KIDS	HI - KOALA IFS Dwarf galaxy Survey (PI: Á. R. López-Sánchez)	<i>Since 2018</i>
WEAVE- Apertif	(PI: J. Falcón-Barroso)	<i>Since 2021</i>
WEAVE- Cluster	(PI: J. Alfonso López Aguerri)	<i>Since 2023</i>
HECTOR	Data reduction team member (PI: Julia Bryant)	<i>Since 2022</i>
Euclid consortium	Galaxy evolution SWG, Local Universe SWG, OU-EXT	<i>Since 2023</i>
<hr/> Other professional activities		
Journal referee	MNRAS	
University of Groningen	Postdoc Council member 2024-2025	
NOVA	Kapteyn Astronomical Institute postdoc representative 2024-Present	
Kapteyn Astronomical Institute	Postdoc representative 2024-Present	
<hr/> Outreach		
	<u>Press releases</u>	
2021	"How do galaxies really evolve?": press release note based on Corcho-Caballero et al. 2021a (more than 10 articles published across several Spanish-speaking countries).	
2021	Euclid Q1 press release: leader of one of the 27 papers that were part of the Q1 Euclid release note.	
	<u>Events and Media</u>	
2023	Interview at Noosfera podcast: the history of a galaxy.	
2022	Stargazing event in Sydney	
2021	How do galaxies really evolve?: Interview at "Onda Cero" (Spanish national radio).	
2021	How do galaxies really evolve?: Interview at "Cadena SER" (Spanish national radio).	

2018-2019 Weekly radio program about astronomy news, "El Universo en la Siberia", Siruela, Spain.