

PERSONAL
INFORMATION

Carlos Gómez Guijarro

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Date of birth 26th Dec. 1990 | Nationality Spanish

CURRENT POSITION

2019/10– CNRS postdoctoral researcher at UMR AIM (DAP) - CEA Paris-Saclay
Laboratory of Cosmology and Galaxy Evolution (LCEG)

RESEARCH PROFILE

My scientific interest is to discover our cosmic origins by exploring the formation and evolution of the structures in our Universe. In my research I use both detailed and statistical studies of galaxy samples and multiwavelength datasets ranging from X-ray to radio, being PI and Co-I of numerous observing time proposals. I always envision my research with a local and an international scope, collaborating with both small teams and big international collaborations. I am very active in transmitting my results in international conferences and my knowledge by supervising students.

EDUCATION

- 2015/10–2019/03 PhD in Astrophysics, Niels Bohr Institute, University of Copenhagen, Denmark
PhD degree awarded on May 15, 2019 - Advisor: Sune Toft
Thesis: Connecting the Extremes - High-redshift Starbursts as Progenitors of Massive Galaxies
- 2013/09–2014/09 Master of Science in Astrophysics, Universidad Complutense Madrid, Spain
Awarded with a distinction in the course *Galaxy Formation and Evolution*
- 2008/09–2013/09 Bachelor of Science in Physics and Astrophysics, Universidad Complutense Madrid, Spain
Long cycle degree of 5 years - Top 10% of the class - Awarded with 12 distinctions

RESEARCH
EXPERIENCE

- 2015/10–2019/09 PhD Fellow at Cosmic Dawn Center, Niels Bohr Institute, University of Copenhagen, Denmark
Prior 2018/07 PhD Fellow at Dark Cosmology Centre, Niels Bohr Institute
- 2017/04–06 Visit internship (3 months) with Dominik Riechers at Cornell University, USA
- 2017/02 Research visit (1 week) with ALMAARC Node at Onsala Space Observatory, Sweden
- 2016/09 Research visit (1 week) with Alexander Karim at AlfA Bonn, Germany
- 2013/02–2015/09 Research assistant with Jesús Gallego at UCM, Spain
- 2015/07 Research visit (1 month) with Omaira González-Martín at IRyA, Mexico
- 2014/07–09 Internship (3 months) with Omaira González-Martín at IAC, Spain
- 2009/03–05 Trainee (3 months) with Miguel Ángel González-Barrio at UCM, Spain

COLLABORATIONS

International teams
and projects

- 2023– ALMA-FPA development study (co-I)
- 2022– Public Release Imaging for Extragalactic Research (JWST), PRIMER (member)
- 2022– The Cosmic Evolution Early Release Science Survey (JWST), CEERS (member)
- 2019– GOODS-ALMA, 1.1mm galaxy survey (data manager)
- 2018– BUFFALO, a HST survey in the Frontier Fields (member)
- 2015– The Cosmic Evolution Survey, COSMOS (member)
- 2015– SHARDS, an ESO/Gran Telescopio Canarias large program in GOODS-N and the Frontier Fields (member)

International
collaborations

CEA Saclay/LAM/ObAS/IAP (France), DAWN/DARK (Denmark), ESO/AlfA Bonn (Germany), NRAO/Cornell University/Stanford University/NASA Ames (USA), IRyA (Mexico), CAB/IAC/UCM (Spain)

PUBLICATION
SUMMARY(as of 24th August 2023)

- 8 first-author publications in peer-reviewed journals with 209 citations
- 54 publications in peer-reviewed journals with 1390 citations
- H-index: 22

SCHOLARSHIPS AND
AWARDS

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| 2015/10–2019/03 | PhD Fellowship, Niels Bohr Institute, University of Copenhagen, Denmark |
| 2014/07–2014/09 | Summer Grant at the IAC within the Program of Initiation to Astrophysical Research |
| 2013–2014 | Collaboration Scholarship by the Ministry of Education of the Spanish Government Awarded to talented students to collaborate with a university department |
| 2008–2009 | Scholarship for Outstanding Students by the Education Office of the Community of Madrid Awarded to students with the top grades at the Spanish University Access Test |

KEY PRACTICAL SKILLS

Data reduction

- Processing of optical/near-IR imaging drizzled data (JWST, HST)
- Calibration and imaging of (sub)mm/radio interferometric data (ALMA, VLA)
- Processing of optical/near-IR spectroscopy (Keck/MOSFIRE, NOT/ALFOSC and FIES)
- Processing of X-ray imaging data (Chandra)

Data analysis

- Development of an aperture photometry code
- Development of an interferometric uv-plane stacking code
- Analysis of optical/near-IR and sub(mm)/radio imaging and spectra
- Source detection, photometry, and catalog build-up of optical/near-IR (SExtractor, aperture and model fitting photometry) and (sub)mm/radio (PyBDSF, photometry in image and uv-plane) data
- SED fitting of optical/near-IR (EAZY, FAST, LePhare) and far-IR/panchromatic (CIGALE) data
- Morphological fitting of optical/near-IR (GALFIT, Statmorph) and (sub)mm/radio (CASA, GILDAS) data

Computing

- Programming: Python, R, C/C++, MATLAB - Mathematics: Maple, Mathematica
- Operating systems: Linux, Mac, Windows – Office automation: LaTeX, MS Office, Mac tools

Languages

- Spanish: Mother tongue
- English: Full working proficiency (C2)
- French: Limited working proficiency (B2)

OBSERVING TIME
ALLOCATION AND
EXPERIENCE

Proposal time allocation

Optical/near-IR:

PI – ESO/KMOS 110.23UN (8h B grade): Instantaneous star formation rate to uncover the role of compact star formation
Co-I – ESO/KMOS 110.240K (21.3h B grade): Uncovering the role of optically dark galaxies in an overdensity at $z = 3.5$
Co-I – ESO/X-Shooter 109.22Y5 (56h A grade): Deep spectroscopy of bright red massive quiescent galaxies at $z \sim 2.5 - 3$
Co-I – ESO/KMOS 109.23CE (31h B grade): The gas content of sub-millimeter compact galaxies at cosmic noon
Co-I – Keck/MOSFIRE S22A-046 (2nights): The emerge of the first quiescent galaxies – take 2
Co-I – Gemini/GMOS 21BCF05 (9.8h): Are submm compact main sequence galaxies actually faded starbursts?
Co-I – Keck/MOSFIRE S20B-031 (2nights): The emerge of the first quiescent galaxies
Co-I – Keck/MOSFIRE S20A-037 (1nights): Direct spectroscopic confirmation of $z > 4$ quiescent galaxies
Co-I – Keck/MOSFIRE S18B-040 (1nights): Direct spectroscopic confirmation of $z > 4$ quiescent galaxies
Co-I – HST GO 15117 (101orbits): BUFFALO
Co-I – Keck/MOSFIRE S17B-106 (1nights): Direct spectroscopic confirmation of $z > 4$ quiescent galaxies

(Sub)mm/radio:

PI – VLA 22B-243 (13.2h B grade): The true extent of the cold gas content in a red sequence progenitor
PI – NOEMA W21CO (8h B grade): Uncovering a unique population of gas giants at $z = 1.2$
PI – NOEMA W19CV (7.3h B grade): Peering into the pace of massive galaxy evolution
Co-I – VLA 23B-125 (29.3h A grade): A systematic CO(1-0) survey of $z = 2.5-4$ protocluster cores
Co-I – NOEMA S23CT (5.4h A grade): CII follow-up for a dusty star-forming galaxy at $z=6.09$
Co-I – NOEMA S23CY (12h A grade): Revealing the interstellar medium of two extremely massive galaxies at $z > 7$
Co-I – NOEMA W22DA (14h B grade): JWST and NOEMA unveil the nature of submm-compact galaxies
Co-I – VLA 22B-124 (67.1h B grade): A golden reference for ISM studies of distant normal galaxies: completion
Co-I – ALMA 2022.1.00884.S (8.7h A grade): Redshift scans for dusty star-forming galaxies at cosmic dawn

Co-I – NOEMA S22CN (20h A grade): Optically-dark galaxies in the EGS field
 Co-I – VLA 22A-400 (60h B grade): High redshift star formation and AGN activity in the JWST CEERS public survey
 Co-I – NOEMA M21AA (159h A grade): NOEMA forming-clusters evolution survey (NICE)
 Co-I – VLA 21B-292 (60h C grade): High redshift star formation and AGN activity in the JWST CEERS public survey
 Co-I – ALMA 2021.1.00815.S (39.8h C grade): Testing structure formation, quenching and gas accretion models
 Co-I – VLA 21A-133 (165.5h B grade): A golden reference for ISM studies of distant normal galaxies
 Co-I – VLA 21A-043 (11.5h C grade): Flares, breaks and warps in the outskirts of the HI and stellar disk of UGC11859
 Co-I – VLA 20B-247 (24.2h C grade): Investigating possible non-gravitational ICM heating in a galaxy cluster at $z = 2$
 Co-I – VLA 20A-485 (9h C grade): Flares, breaks and warps in the outskirts of the HI and stellar disk of UGC11859
 Co-I – NOEMA 225-19 (22h B grade): Knocking on giant's door: A large-scale view of candidate $z > 4$ dusty galaxies
 Co-I – ALMA 2018.1.01676.S (9.4h C grade): A total mass profile for a prototypical $z \sim 4.6$ massive star forming disk galaxy
 Co-I – ALMA 2018.1.01225.S (19.4h C grade): What is the origin and subsequent evolution of starbursts at $z \sim 2$?
 Co-I – ALMA 2016.1.01001.S (14.6h C grade): What is the origin and subsequent evolution of starbursts at $z \sim 2$?

Visitor observations

Gran Telescopio Canarias 10.4m (OSIRIS, 1night); Keck 10m (MOSFIRE, 2half-nights); Nordic Optical Telescope 2.6m (ALFOSC and FIES, 8nights); Calar Alto Observatory 2.2m (CAFOS and FOCES, 3nights)

CONFERENCES AND WORKSHOPS

Invited talks

Participation through personal invitation:

- 2023/06 French Society of Astronomy Meeting 2023, Strasbourg, France
- 2023/03 The growth of galaxies in the early universe VIII, Sexten, Italy
- 2022/11 BOBAFET (transdisciplinary SFH workshop), LAM, Marseille, France
- 2022/03 The growth of galaxies in the early universe VII, Sexten, Italy
- 2021/11 Sino-French workshop: Simulations and observations of galaxies and protoclusters, Nanjing (Virtual), China
- 2021/10 High-z dusty galaxies, LAM, Marseille, France
- 2020/01 The growth of galaxies in the early universe VI, Sexten, Italy
- 2018/03 Galaxy interactions and mergers across cosmic time, Sexten, Italy
- 2017/11 The physics of quenching massive galaxies at high redshift, Leiden, The Netherlands

Contributed talks

Participation through abstract review:

- 2023/07 GECCO conference – Shedding new light on the first billion year of the Universe, Marseille, France
- 2022/06 EAS 2022 – The main sequence: going beyond the scaling relation, Valencia, Spain
- 2022/06 EAS 2022 – The ISM of infrared galaxies from present to cosmic noon, Valencia, Spain
- 2022/03 Cosmic nuggets: A feast of compact and massive galaxies across the universe, Sexten, Italy
- 2020/03 IAU Symposium 359: Galaxy evolution and feedback across different environments, Bento Gonçalves, Brazil
- 2018/09 Birth, life and fate of massive galaxies and their central beating heart, Favignana, Italy
- 2018/08 IAU GA 2018 – Division J Meeting – Build-up of galaxy clusters, Vienna, Austria
- 2018/07 Spanish Society of Astronomy Meeting 2018, Salamanca, Spain
- 2014/09 Spanish Society of Astronomy Meeting 2014, Teruel, Spain

Team meeting talks

Participation through team membership:

- 2023/05 CEERS Team Meeting 2023, Austin, USA
- 2022/07 COSMOS Team Meeting 2022, Paris, France
- 2019/11 ASPECS Team Meeting 2019, Schloss Ringberg, Germany
- 2019/09 GOODS-ALMA Meeting 2019, CEA Saclay, France
- 2018/06 COSMOS Team Meeting 2018, Copenhagen, Denmark
- 2017/07 COSMOS Team Meeting 2017, Kyoto, Japan
- 2016/06 COSMOS Team Meeting 2016, Baltimore, USA

Posters

Participation through abstract review:

- 2023/07 EAS 2023 – Coming out of darkness: how JWST is changing our view of high-z dusty galaxies, Kraków, Poland
- 2021/06 EAS 2021, Leiden (Virtual), The Netherlands
- 2017/08 SMG20, Durham, UK
- 2014/06 EWASS 2015 – Galaxy studies in the mid-infrared form space and ground, Tenerife, Spain

COLLOQUIA, SEMINARS, AND TALKS

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| Colloquia series | Through abstract review: |
| 2022/03 | Hypatia Colloquium 2022, ESO Garching, Germany |
| Invited talks | Through personal invitation: |
| 2023/05 | Space Science & Astrobiology Division seminars, NASA Ames, California, USA |
| 2023/05 | KIPAC Cosmology seminars, Stanford University, California, USA |
| 2022/02 | Department of Astronomy seminars, Stockholm University, Sweden |
| 2021/12 | Joint ALMA Observatory colloquia, Santiago, Chile |
| 2021/05 | CAB MdM seminars, Centro de Astrobiología, Madrid, Spain |
| 2021/03 | IPARCOS astro-seminars, Universidad Complutense, Madrid, Spain |
| 2019/11 | Journal club seminars, IAP, Paris, France |

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| Visitor talks | During a scientific visit: |
| 2022/11 | Cake talks, DAWN, Copenhagen, Denmark |
| 2017/11 | Subaru seminars, Subaru Telescope, Hawaii, USA |
| 2017/11 | Freddie seminars, IfA, Hawaii, USA |
| 2016/04 | Advanced radio astronomy seminars, Cornell University, USA |

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| Local talks | As a local scientist: |
| 2023/06 | DAP postdocs seminars, CEA Saclay, France |
| 2020/05 | LCEG DAP seminars, CEA Saclay, France |
| 2019/05 | Interferometry seminar, DARK, Copenhagen, Denmark |
| 2018/03 | Cake talks, DARK, Copenhagen, Denmark |

STUDENT SUPERVISION

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| 2022/10– | Maxime Tarrasse, PhD student, CEA Saclay, France – Co-supervisor |
| 2021/10– | David Blázquez Sese, PhD student, DAWN - DTU, Copenhagen, Denmark – Co-supervisor |
| 2019/10–2022/12 | Mengyuan Xiao, PhD student, CEA Saclay/Nanjing University, France/China – Co-supervisor |
| 2021/01–06 | David Blázquez Sese, Master student, DAWN - DTU, Copenhagen, Denmark – Co-supervisor |
| 2020/01–06 | Guillaume Villaret, Master student (M1), CEA Saclay, France – Main supervisor |
| 2022/04–06 | Victor Jaulin, Bachelor student (L3), CEA Saclay, France – Main supervisor |

TEACHING EXPERIENCE

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| Teaching assistant | University of Copenhagen (280h over three courses): |
| 2018 | Danish Summer School in observational astronomy (Master level course) |
| 2017–2018 | Cosmology (3 rd year physics bachelor course) |
| 2016 | Niels Bohr Institute Summer School in observational astronomy (Master level course) |

PROFESSIONAL SERVICE

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| Organization of scientific meetings | |
| 2023/07 | EAS 2023 Symposium – Early assembly of galaxies with JWST spatially resolved spectroscopy and photometry (SOC), Krakow, Poland |
| 2018/06 | COSMOS Team Meeting 2018 (LOC), Copenhagen, Denmark |
| Reviewer | |
| 2023 | PhD thesis external referee – Ángela García Argumánez (UCM, Spain) |
| 2019– | Referee for ApJ, A&A, and MNRAS |
| 2022–2023 | Evaluation of ESO Period 110, 112 proposals |
| 2021–2023 | Evaluation of ALMA Cycle 8, 9, 10 proposals |
| 2018 | Evaluation of a Gemini telescope proposal on behalf of the Canadian Time Allocation Committee |

Others

- 2020– Organization team member of the astrophysics seminars of the DAp, CEA Saclay, France
- 2018 Creator, organizer and speaker of the seminar series *All you always wanted to know about*, aimed at discussing and sharing knowledge about general astronomy topics, DARK, Copenhagen, Denmark

OUTREACH

- 2019/12 Interview for the podcast *Hablando con Científicos* of cienciaes.com, Madrid, Spain
- 2018/10 Exhibitor at the event *Art in Science* during the Culture Night 2018, Copenhagen, Denmark
As winner of the *Mega* category in the 2017 contest
- 2017/10 Exhibitor at the event *Art in Science* during the Culture Night 2017, Copenhagen, Denmark
- 2013/03 Volunteer at *La Uni en la Calle* (2nd edition), Madrid, Spain
- 2012/11 Volunteer at *La Uni en la Calle* (1st edition), Madrid, Spain
- 2009/11 Volunteer at the *IX Week of Science*, Madrid, Spain

REFERENCES

| | | |
|-----------------------------------|--------------------------------|----------------------------|
| Prof. Sune Toft | DAWN - U. Copenhagen, Denmark | sune@nbi.ku.dk |
| Dr. David Elbaz | CEA Saclay, France | david.elbaz@cea.fr |
| Prof. Georgios Magdis | DAWN - DTU, Denmark | geoma@space.dtu.dk |
| Dr. Emanuele Daddi | CEA Saclay, France | edaddi@cea.fr |
| Dr. Laure Ciesla | LAM, France | laure.ciesla@lam.fr |
| Prof. Dominik Riechers | University of Cologne, Germany | riechers@ph1.uni-koeln.de |
| Prof. Pablo G. Pérez-González | CAB, Spain | pgperez@cab.inta-csic.es |
| Dr. Mark Dickinson | NSF's NOIRLab, USA | mark.dickinson@noirlab.edu |
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