

CARLOS MARTÍNEZ-SEBASTIÁN

4th year Ph.D. student



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ABOUT ME

I am a predoctoral fellow at the IAC, in Spain. I am in the fourth year of my Ph.D., with experience in quantitative spectroscopy.

AWARDED GRANTS

Astrofísico Residente

Instituto de Astrofísica de Canarias

 02/11/2022-Present

 Tenerife

Initiation to the Astrophysical Research

Instituto de Astrofísica de Canarias

 19/07/2021-15/09/2021

 Tenerife

EDUCATION

Ph.D. in Astrophysics

University of La Laguna (ULL)

 Nov 2022 – Present

B.A. in Philosophy

Universidad Nacional de Educación a Distancia (UNED)

 Oct 2022 – Present

Academic average grade: 9.17/10

Passed ECTS: 46

M.Sc. in Astrophysics

University of La Laguna (ULL)

 Oct 2020 – Sept 2022

Academic average grade: 9.35/10

Passed ECTS: 90

B.Sc. in Physics (240 ECTS)

Autonomous University of Madrid (UAM)

 Sept 2015 – July 2019

Academic average grade: 7.57/10

Passed ECTS: 240

SCHOOLS

Arqueoastronomía: metodologías y aproximaciones para una astronomía cultural

INCIPIT

 12/05/2025-16/05/2025

 Santiago de Compostela, Spain

 30 h

Writing and Communicating your Science - an IAA-CSIC Severo Ochoa Workshop

IAA-CSIC

 04/11/2024-08/11/2024

 Granada, Spain

 25 h

Summer School in Statistics for Astronomers

The Pennsylvania State University	📅 03/06/2024-07/06/2024	📍 Online	🕒 25 h
2nd Iberian Space Science Summer School (i4s) 2022			
University of Alcalá de Henares	📅 06/06/2022-10/06/2022	📍 Alcalá de Henares, Spain	
Course in the use of telescopes			
University of La Laguna	📅 11/2022-12/2022	📍 San Cristóbal de la Laguna	🕒 50 h
I Latin American Gaia school			
University of Antioquia	📅 07/02/2022-11/02/2022	📍 Online	🕒 20 h
XXI school of the Spanish Virtual Observatory			
Spanish Virtual Observatory	📅 15/10/2021 & 17/10/2021	📍 Online	🕒 10 h
Astronomical calculus course			
Autonomous University of Madrid	📅 01/2018-05/2018	📍 Madrid, Spain	🕒 75 h

CONFERENCES AND WORKSHOPS

Stellar Evolution, Exoplanets, and Dynamics of Stellar Systems

Observatorio Astronómico de Córdoba

📅 22/04/2026-24/04/2026

📍 Córdoba, Argentina

Contributed talk: Revisiting the helium discrepancy: New hints for the binary origin of helium enrichment in Main Sequence massive stars.

Munichfest2025: Celebrating 40 years of research on hot luminous stars

Hotel La Palma & Teneguía Princess

📅 07/04/2025-11/04/2025

📍 La Palma, Spain

Contributed talk: der gestirnte himmel über mir: Observational hints of binary interacting products in Galactic massive O-type stars with IACOB and Gaia

Rodolfo Barbá: A pioneer in Massive Star research

Centro de Astrobiología

📅 18/09/2024-20/09/2024

📍 Madrid, Spain

Contributed talk: He-rich O-type stars as possible tracers of past binary interaction

VLT-FLAMES Tarantula Survey meeting 2024

Centro de Astrobiología

📅 16/09/2024-18/09/2024

📍 Madrid, Spain

Contributed talk: He-rich O-type stars as possible tracers of past binary interaction

Workshop From discovery to a population: benchmarking stripped stars and companions

Lorentz Center

📅 22/07/2024-26/07/2024

📍 Leiden, Holland

Flash talk: He-rich O-type stars as possible tracers of past binary interaction

XVI Reunión Científica de la Sociedad Española de Astronomía

Parque de las Ciencias de Andalucía

📅 15/07/2024-19/07/2024

📍 Granada, Spain

Contributed talk: He-rich O-type stars as possible tracers of past binary interaction

Stable mass transfer in binaries

Flatiron Institute

📅 11/03/2024-13/03/2024

📍 New York City, U.S.A.

Contributed talk: He-rich O-type stars as possible tracers of past binary interaction

Workshop The Renaissance of Stellar Black-Hole Detections in The Local Group

Lorentz Center

📅 26/06/2023-30/06/2023

📍 Leiden, Holland

VLT-FLAMES Tarantula Survey meeting 2023

Max Planck Institute for Astrophysics in Garching

📅 27/03/2023-29/03/2023

📍 Garching, Germany (online assistance)

Due to airport strike, I had to attend online

XV Reunión Científica de la Sociedad Española de Astronomía

University of La Laguna

📅 03/09/2022-10/09/2022

📍 Tenerife, Spain

EAS Annual Meeting 2022

EAS

📅 27/06/2022-01/07/2022

📍 Valencia, Spain

Volunteer for the organization of the EAS 2022 annual meeting.

PUBLICATIONS

As main author

1. *The IACOB project XVII. Surface nitrogen abundances in Galactic O-type stars*
Authors: **C. Martínez-Sebastián**, S. Simón-Díaz, G. Holgado, F. Martins, J. Puls
Publication: Submitted
2. *The IACOB project XIII. Helium enrichment in O-type stars as a tracer of past binary interaction*
Authors: **C. Martínez-Sebastián**, S. Simón-Díaz, H. Jin, Z. Keszthelyi, G. Holgado, N. Langer, J. Puls
Publication: 2025A&A...693L..10M

As co-author

1. *The IACOB project XVI. A large-scale investigation of surface helium abundances in Galactic O-type stars*
Authors: S. Simón-Díaz et al., **C. Martínez-Sebastián**
Publication: In peer reviewing (A&A)
2. *The lack of fast rotators in Cyg OB2. I. Insights from spectral reclassification of its B0 population*
Authors: D. Galán-Diéguez, S.R. Berlanas, A. Herrero, M. Abdul-Masih, D.J. Lennon, **C. Martínez-Sebastián**, F.M. Pérez-Toledo
Publication: 2026A&A...706A..59G
3. *An observational study of rotation and binarity of Galactic O-type runaway stars*
Authors: M. Carretero-Castrillo, M. Ribó, J.M. Paredes, G. Holgado, **C. Martínez-Sebastián**, S. Simón-Díaz
Publication: 2026A&A...705A.215C
4. *Fast infrared winds during the radio-loud and X-ray obscured stages of the black hole transient GRS 1915+105*
Authors: J. Sánchez-Sierras, T. Muñoz-Darias, S. E. Motta, R. P. Fender, A. Bahramian, **C. Martínez-Sebastián**, J. A. Fernández-Ontiveros, J. Casares, M. Armas Padilla, D. A. Green, D. Mata Sánchez, J. Strader, M. A. P. Torres
Publication: 2023A&A...680L..16S

SCIENCE COMMUNICATION

Lecture Series on Massive Stars

Online

📅 11/09/2024

📍 Barcelona, Spain

Lecture title: From Radiative Transfer Theory to Stellar Atmosphere Codes

FCAG-UNLP Seminar

Universidad Nacional de La Plata

📅 31/10/2025

📍 La Plata, Argentina

Seminar title: Helium enrichment in O-type stars as a tracer of past binary interaction

Tenerife Lan Party

Recinto Ferial de Tenerife

📅 16/07/2024-18/07/2024

📍 Tenerife, Spain

General presentation of astrophysics and different IAC projects

Jornadas de Puertas Abiertas del Observatorio del Teide 2025

Teide Observatory

📅 22/06/2025

📍 Tenerife, Spain

Group leader and answer questions between stops

Día de nuestra ciencia y tecnología

IACTEC

📅 06/06/2025

📍 Tenerife, Spain

Contributed talk: Observational hints of binary interacting products in Galactic O-type stars with IACOB and GAIA.

ICCUB Seminar

Institut de Ciències del Cosmos de la Universitat de Barcelona

📅 11/09/2024

📍 Barcelona, Spain

Seminar title: Helium enrichment in O-type stars as a tracer of past binary interaction

Jornadas de Puertas Abiertas del Observatorio del Teide 2024

Teide Observatory

📅 23/06/2024

📍 Tenerife, Spain

Group leader and answer questions between stops

GEEMAS talk

GEEMAS biweekly meeting

📅 21/11/2023

📍 Online

Talk title: Determination of Nitrogen abundances for O-type stars in the IACOB Galactic sample

Jornadas de Puertas Abiertas del Observatorio del Teide 2023

Teide Observatory

📅 23/06/2023

📍 Tenerife, Spain

Group leader and answer questions between stops

Writer in Astrobites in Spanish

<https://astrobitos.org/author/martinezsebastian97/>

📅 01/2022-01/2023

Writer *ad honorem* in Astrobites in Spanish (supported by the American Astronomical Society). Once per month, I write an article in which I expose the work done in a recent paper in simple terms (to be understood by undergraduate level students). I also edit the articles written by other colleagues. At the moment, I have published 6 times.

COEFIS XIV

University of La Laguna

📅 24/03/2022-25/03/2022

📍 S.C. de la Laguna

Poster: "A combined study of spectroscopic and photometric variability in massive stars" - Results from my summer grant at the IAC.

Contributed talk: "ASTROBIOLOGY: The lucky question" - Summary of some of the most important concepts in astrobiology, as well as the state of the art in the study of exoplanets' atmospheres.

Talk about astronomy for teenagers

IES Luis García Berlanga

📅 11/4/2019

📍 Madrid, Spain

1-hour talk about basic Cosmology to the students of the High School on the occasion of the publication of the first image of a Black Hole.

Activity monitor in the "IV Jornadas de Astronomía en la UAM"

Autonomous University of Madrid

📅 11/5/2019

📍 Madrid, Spain

Monitor in a team game quiz for children about Astronomy. Following the answer, I gave a quick explanation about it. In addition to that, I was answering questions in a exhibition room.

Talk about physical bases for architecture

Eduardo Torroja Institute for Construction Sciences

📅 16/11/2017

📍 Madrid, Spain

On the occasion of Science Week in Madrid, the Association that I presided was invited to participate with an event of science communication. Along half an hour, I presented the physical bases for architecture through a magic event

OBSERVING NIGHTS

Hermes@Mercator

ORM (Spain)

📅 27/11/2025 - 30/11/2025

Hermes@Mercator

ORM (Spain)

📅 23/04/2025 - 29/04/2025

Hermes@Mercator and ALFOSC@Mercator

ORM (Spain)

📅 22/12/2024 - 28/12/2024

ALFOSC@NOT

ORM (Spain)

📅 09/10/2024 - 11/10/2024

HARPS-N@TNG and GIANO-B@TNG

ORM (Spain)

📅 20/07/2024 - 21/07/2024

WFC@INT

ORM (Spain)

📅 19/01/2024 - 22/01/2024

Hermes@Mercator

ORM (Spain)

📅 23/11/2023 - 27/11/2023

HARPS-N@TNG and GIANO-B@TNG

ORM (Spain)

📅 29/10/2023 - 02/11/2023

FIES@NOT

ORM (Spain)

📅 02/09/2023 - 04/09/2023

Hermes@Mercator

ORM (Spain)

📅 30/06/2023 - 04/07/2023

FIES@NOT

ORM (Spain)

📅 08/11/2022 - 10/11/2022

Hermes@Mercator

ORM (Spain)

📅 07/11/2022

WFC@INT

ORM (Spain)

📅 20/11/2021

WFC@INT

ORM (Spain)

📅 13/11/2021

CAMELOT2@IAC80

OAT (Spain)

📅 05/11/2021

CAMELOT2@IAC80

OAT (Spain)

📅 21/10/2021

CAMELOT2@IAC80

OAT (Spain)

📅 16/10/2021

CAMELOT2@IAC80

OAT (Spain)

📅 02/10/2021

CAMELOT2@IAC80

OAT (Spain)

📅 03/12/2020

CAFOS@2.2m-Calar Alto

Calar Alto (Spain)

📅 09/02/2019 - 10/02/2019

TEACHING EXPERIENCE

Instructor (2 ECTS)

University of La Laguna

📅 2024/2025, 2025/2026

📍 San Cristóbal de La Laguna, Spain

Instructor in the internship subject (B.Sc. in Physics) for students in the Museo de Nuestra Ciencia (MCC) and IACTEC. Working as nexus between professional supervisors and the ULL.

Private tutor

📅 2015-2020

📍 Madrid, Spain

Private tutor in maths and science at secondary school levels. Preparation for exams, teaching in a different way the most basic concepts that are the bases of the knowledge in science and maths. I tried to develop an interest in the subject through its use and scientific consequences.

Internship as math teacher

IES Luis García Berlanga

📅 15/2/2019-3/5/2019

📍 Madrid, Spain

Three-months-experience as part of my formation in physics. I developed an experience as a math-teacher in regular education. During this period I supported the main teacher and leading the teaching of some units of the subject. I corrected different exams and gave some talks about physics, its study at university, and an overview of the *state of the art* in astronomy and cosmology.

PROGRAMMING LANGUAGE AND SOFTWARE

Python ● ● ● ● ●

LaTeX ● ● ● ● ●

Linux ● ● ● ● ●

MATLAB ● ● ● ● ●

IRAF ● ● ● ● ●

C++ ● ● ● ● ●

TOPCAT ● ● ● ● ●

ALADIN ● ● ● ● ●

Git ● ● ● ● ●

Gaia ● ● ● ● ●

R ● ● ● ● ●

LANGUAGES

Spanish ● ● ● ● ●
Native tongue

English ● ● ● ● ●
C1

French ● ● ● ● ●
B1

REPRESENTATIVE EXPERIENCE

Ph.D. Student Representative at the Consejo de Investigadores

Instituto de Astrofísica de Canarias

📅 2024-present

📍 San Cristóbal de La Laguna, Spain

Ph.D. Student Representative at the Consejo de Departamento

Astrophysics Department - University of La Laguna

📅 2022-present

📍 San Cristóbal de La Laguna, Spain

M.Sc. Student Representative at the Consejo de Departamento

Astrophysics Department - University of La Laguna

📅 2021-2022

📍 San Cristóbal de La Laguna, Spain

Student Association president

AEC La Chistera - Autonomous University of Madrid

📅 2017-2019

📍 Madrid, Spain

INTERNATIONALIZATION

IALP – Universidad Nacional de La Plata

La Plata (Argentina)

📅 13/10/2025 – 21/11/2025

OCEANS – Overcoming challenges in the evolution and nature of massive stars, HORIZON-MSCA-2023-SE-01

LUMP – Université de Montpellier

Montpellier (France)

📅 09/11/2024 – 20/12/2024

ERASMUS+ Program – student mobility for traineeship