

# Dr. Silvia Martínez Núñez | CV

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Astrophysicist. High Mass X-ray Binaries. Manager of the [Athena X-ray observatory](#) Community Office. Passionate about science, its dissemination and communication to all ages.

## Employment

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- **Institute of Physics of Cantabria (CSIC-UC)**  
*Post-doc Fellow* *March 2016–now*  
I am the manager of the [Athena Community Office \(ACO\)](#). My work implies very diverse responsibilities that have allowed me to develop many different skills. To mention a few of them of relevance to this position: managing documentation; editing the synergy white papers; supporting workshops and meetings; producing the *Athena* Science Newsletter; keeping the community informed about mission activities; assisting in the dissemination of the project; developing outreach material; updating the contents of the web portal; and posting on social channels.  
Apart from my ACO duties, I'm still active in science within the X-WIND collaboration.
- **Alicante University**  
*External Collaborator (unpaid)* *2015–March 2016*  
I was an external collaborator of the [X-ray astronomy group](#), coordinating my ISSI research project: [A Comprehensive View of Stellar Winds in Massive X-ray Binaries](#). This project concluded with the publication of the revision paper [Towards a Unified View of Inhomogeneous Stellar Winds in Isolated Supergiant Stars and Supergiant High Mass X-Ray Binaries](#).
- — *2014*  
*Maternity leave*
- **Alicante University**  
*Post-doc Fellow* *2010–2013*  
I was a Post-doc Fellow at the [X-ray astronomy group](#). My researcher line was the study of the high-mass X-ray binaries using *XMM-Newton* and near-IR data. I was coordinating my ISSI research project: [Unified View of the Stellar Winds in Massive Star Binaries](#).
- **Alicante University**  
*Post-doc Fellow. Juan de la Cierva* *2007–2010*  
I was a Juan de la Cierva Post-doc Fellow. My researcher line was the study of the high-mass X-ray binaries using INTEGRAL, *XMM-Newton* and near-IR data. During this period, I taught several Fundamental Physics courses addressed to undergraduate students at the Polytechnic University College.
- — *2007*  
*Maternity leave*
- **Valencia University**  
*Research Assistant* *2004–June 2007*  
I was a research assistant within the INTEGRAL mission project and member of the JEM-X SDAST (Science Data Analysis Team). I was in charge of the development and maintenance of the JEM-X scientific analysis scripts and JEM-X responsible at ISDC (INTEGRAL Science Data Centre) during the Performance and Verification Phase to test and validate the JEM-X analysis software.

## Education

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- 1999-2005: PhD in Physics with European Honours. University of Valencia. Spain.
- 1993-1998: MSc in Physics. University of Valencia. Spain.

## PhD Thesis

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- Title: *X-Gamma Ray Imaging of High Mass X-ray Binaries with INTEGRAL*.  
Supervisors: Dr. Peter Kretschmar & Dr. Pablo Reig.

## Fellowships

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- **2007-2010: Juan de la Cierva Post-doctoral Fellowship**, full funding for my own position, Spanish Ministry of Science and Research.
- **2000-2004; Pre-doctoral Fellowship**, full funding for my position at the INTEGRAL mission project during my PhD, Valencia University, Spain.

## Research Experience

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### List of Publications (ORCID:0000-0002-5134-4191)

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- **In refereed journals (31)**: [Complete list at ADS](#).
- **Proceedings (34)**: [Complete list at ADS](#).

### Conferences with oral contribution (last 5 years)

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- **2020**: Flow inhomogeneities in supergiant wind-fed systems: observational diagnostics and results. EAS 2020: SS 07: Clumpy environment around accreting compact objects: from stellar-mass accretors to AGNs.
- **2019**: Diving into the whirlpool – understanding accretion in High-Mass X-ray Binaries with Vela X-1. Spanish X-ray Astronomy 2019: present, future, synergies. Alicante. Spain.
- **2019**: Athena Community Office. Spanish X-ray Astronomy 2019: present, future, synergies. Alicante. Spain.
- **2018**: Our current picture of the physics of wind-fed massive X-ray binary systems. IAUS 346 High Mass X-ray Binaries: illuminating the passage from massive binaries to merging compact objects. Wien. Austria.
- **2018**: Athena Community Office. Exploring the Hot and Energetic Universe: The second scientific conference dedicated to the Athena X-ray observatory. Palermo. Italy.
- **2017**: A revision of the current knowledge on wind-fed massive X-ray binaries. EWASS 2017. Prague. Czech Republic.

### Participation in R+D projects

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- **2019-2021**: Athena, fase A2/B/C. Participación científica en la misión y desarrollo del instrumento X-IFU (RTI2018-096686-B-C21). P.I.: Dr. María Teresa Ceballos & Dr. Silvia Mateos. Funding Agency: Spanish R+D.
- **2017-2019**: Athena, Phase A/B1. Scientific participation and development of the X-IFU instrument (ESP2016-76683). P.I.: Dr. María Teresa Ceballos. Funding Agency: Spanish R+D.
- **2015-2017**: [A Comprehensive View of Stellar Winds in Massive X-ray Binaries](#). P.I.: **Dr. Martínez-Núñez**. Funding Agency: International Space Science Institute.
- **2012-2014**: [Unified View of the Stellar Winds in Massive Star Binaries](#). P.I.: **Dr. Martínez-Núñez**. Funding Agency: International Space Science Institute.
- **2011-2013**: From INTEGRAL to IXO: X-ray Binaries and active stars (AYA2010-15431). P.I.: Dr. Torrejón. Funding Agency: Spanish R+D.
- **2009-2010**: Multiplicity and evolution of massive stars (AYA2008-06166-C03-03). P.I.: Dr. Negueruela. Funding Agency: Spanish R+D.

- **2009-2010**: 1st Science with GTC(CSD2006-00070). P.I.: Dr.Rodríguez-Espinosa. Funding Agency: Spanish R+D.
- **2009-2010**: Massive stars: birth and evolution (AYA2005-00095). P.I.:Dr. Negueruela. Funding Agency: Spanish R+D.
- **2005-2007**: 4 Pi Gamma Ray Imaging: Integral + ASIM at the ISS (ESP2005-07714-C03). P.I.:Dr. Reglero. Funding Agency: Spanish R+D.

## Organisation of workshops and conferences (last 5 years).....

- Organiser: [2021 EAS: Black holes under the magnifying glass of XRISM and Athena](#), July 2021.
- Organisational support: [Rubin-Athena synergy workshop](#), April 2021.
- Organiser: [Athena SIXTE Webinar](#), May 2020.
- Organisational support: [The Athena Multi-messenger and High Energy Astrophysics Synergy \(AMHEAS\) Workshop II](#), May 2020.
- LOC member: [V Spanish Meeting of AGN Research](#), July 2019.
- SOC member: [EWASS 2019: 3-D spectroscopy from sub-mm to X-ray: the promise of Athena in the 2030s multiwavelength context](#), June 2019.
- LOC member: [Santander 2019: Athena SIXTE Workshop](#), Feb. 2019.
- Organisational support: [Santander 2019: Atomic Databases Meeting](#), Feb. 2019.
- SOC chair and LOC chair: [Santander 2018: Stellar Winds in Wind-Fed Systems](#), Oct. 2018.
- Organisational support: [SKA-Athena Synergy Workshop](#), April 2017.
- Organisational support: [ESO-Athena Synergy Workshop](#), Sept. 2016.

## Collaborations.....

- [X-Wind collaboration](#) 2016 – present.
- *Athena* working group member, science WGs 3.5, 2015 – present.
- eXTP working group member, 2020 – present.

## Software development experience.....

- **2021**: *Athena* simulation tool distributed openly in the GitHub platform under [this repository](#).
- **2002-2007**: Member of JEM-X SDAST (Science Data Analysis Team). Main responsibilities:
  - Development and maintenance of ISDC JEM-X scientific analysis scripts.
  - JEM-X responsible at ISDC (INTEGRAL Science Data Centre) during Performance and Verification Phase to test and validate the JEM-X analysis software.

## Education and Communication Experience

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- **2016-now**: Coordinating the developed of [outreach material of the Athena community office](#) together with Dr. María Teresa Ceballos.
- **2021**: [IAU Meet the Astronomer!](#). [Remote talk](#) to Colegio Campestre San José in Colombia for children 12-16 years old.
- **2020-2021**: Coordinating the activity of the Spanish Astronomical Society – [Chatea con una astrónoma](#) – together with Dr. Adriana de Lorenzo-Cáceres Rodríguez and Dr. Julia Suso.
- **2016-now**: outreach and dissemination activities organised by the Institute of Physics of Cantabria (IFCA) and the *Athena* Community Office (ACO):
  - [Expanding Science](#): several dozens of talks within this initiative that allows Cantabrian Schools to ask for introductory physics talks to IFCA's researchers. This activity is addressed to infant, elementary and high school students.
  - [Open Days](#): open days addressed to elementary and high school students to learn about the research lines at IFCA.
  - [Science and Technology Week](#): it constitutes a dissemination activity addressed to high school students to engage them on the science and technology developed to IFCA.

- [European Researchers Night](#): scientific exhibition to the general public on Plaza Porticada with the aim of increase awareness among of the importance and benefits of research and innovation focused in the *Athena* project.
- International Day of Women and Girls in Science: active participation on the initiatives of the [11th of February day organised by IFCA](#); co-coordination of the [ACO community activities](#); and public talks to high school students focused in the story of Jocelyn Bell and the discovery of pulsars.
- o **2018**: Participation in the program [La Universidad en tu barrio](#) of the University of Cantabria. My [activity](#) was focused on the ESA Rosetta mission (children 8-10 years old).
- o **2012**: Ten Years Observing the Violent Universe with INTEGRAL. Public talk at the 12th Conference on Dissemination of Astronomy, organised by the X-ray Astronomy Group of the University of Alicante. Addressed to general public.
- o **2009**: Member of Spanish Outreach Working Group on Astronomical Activities for People with Special Needs of the Spanish International Year of Astronomy committee:
  - Responsible for outreach activities adapted to people with cognitive impairments.
  - Co-author of "[La vida de las estrellas](#)" addressed to people with cognitive impairments.
- o **2009**: The Colours of the Universe. Public talk at the 9th Conference on Dissemination of Astronomy, organised by X-ray Astronomy Group of the University of Alicante. Addressed to general public.

## Teaching Experience

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- o **2016-now**: supervisor of summer internships for undergraduate students of Physics and Maths of the University of Cantabria.
- o **2020**: supervisor of the final degree project [Predicting the future Pulsar Wind Nebulae population in the TeV sky by Javier Gómez de la Gándara Pérez](#).
- o **2009-2012**: lecturer of Fundamental Physics courses addressed to students of the first grade of a variety of Engineering degrees from Civil Engineering to Computing Engineering at Alicante University.

## Stays at International Research Centres

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- o **2010**: Istituto Nazionale di Astrofisica. Rome. 1 month.
- o **2002 till 2007**: INTEGRAL Science Data Centre. Versoix. Short stays (one to four weeks).
- o **2002**: Centre d'Etude Spatiale des Rayonnements. Toulouse. 3 weeks.
- o **2001-2002**: Danish Space Research Institute. Copenhagen. 1 year.

## Technical and Personal skills

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- o **Collaborative software tools**: Advanced in Slack, Trello, Drive, Overleaf.
- o **Web portal content management system**: Advanced in Joomla and INDICO-Cern.
- o **Social Media**: Advanced in Twitter, Facebook and Hootsuite.
- o **Programming Languages**: Advanced in Python.
- o **General Skills**: Manager capacity, Fostering Cooperation, Continuous Improvement, Versatile, Forward Thinking.

## Memberships

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- o Member of the Spanish Astronomical Society (SEA).
- o 2016-2021: Member of the Women and Astronomy committee of SEA.
- o Member of the European Astronomical Society (EAS).
- o Member of the Royal Spanish Physics Society (RSEF) and its women's group specialised in physics (GEMF).
- o Member of the IAU and its working group in Astronomy for Equity and Inclusion.
- o Member of the Equality and Diversity Commission of the Institute of Physics of Cantabria.