



Rubén López-Coto

Curriculum Vitae

Personal Information

Date of Birth May, 26th 1987. Huelva, Spain.

Nationality Spanish.

ORCID 0000-0002-3882-9477

SCOPUS ID 55014262900

Education

2011–2015 **PhD. Physics**, *Universitat Autònoma de Barcelona*, Barcelona, Spain.

2009–2010 **M.Sc. Physics**, *Münster Universität*, Münster, Germany.

2005–2009 **Dipl. Physics**, *Universidad de Sevilla*, Sevilla, Spain.

Habilitation

2019–2030 **Abilitazione Scientifica Nazionale 02/A1**, *Fisica Sperimentale delle Interazioni Fondamentali*, Italy.

2019–2030 **Abilitazione Scientifica Nazionale 02/C1**, *Astronomia, Astrofisica, Fisica della Terra e dei Pianeti*, Italy.

PhD thesis

Title *Very-high-energy observations of pulsar wind nebulae and cataclysmic variable stars with MAGIC and development of trigger systems for IACTs.*

Supervisors Dr. Juan Cortina, Dr. Oscar Blanch. Qualification: Excellent *cum laude* (highest grade).

Master thesis

Title *Test and commissioning of the detector system in the $^{209}\text{Bi}^{80+}$ experiment at the Experimental Storage Ring (ESR) at GSI.*

Supervisors Prof. Dr. Christian Weinheimer, Dr. Volker Hannen. Qualification: *Grade A (sehr gut)*.

Experience

2022– **Ramón y Cajal fellow**, *IAA-CSIC*, Granada.

2019–2022 **Marie Skłodowska-Curie FELLINI fellow**, *INFN*, Padova.

2017–2019 **INFN Postdoctoral fellow**, *INFN*, Padova.

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- 2015–2017 **Postdoctoral Researcher**, *MPIK*, Heidelberg.
- 2011–2015 **FPI-PhD-Fellow**, *IFAE*, Barcelona.
- 2010–2011 **Researcher**, *CSIC*, Granada, Instituto de Astrofísica de Andalucía.
- 2009–2010 **Master student**, *Münster Universität*, Münster, Institut für Kernphysik.
- 2009 **JAE Intro-Fellow**, *CSIC*, Granada, Instituto de Astrofísica de Andalucía.
- 2008 **JAE Intro-Fellow**, *CSIC*, Sevilla, Instituto de Microelectrónica de Sevilla.

Responsibilities

- 2023–Present **Speakers and Publications Office member of CTA.**
- 2022–Present **Member of the Coordination Committee of Gammapy.**
- 2021–Present **Member of the LST Physics Committee.**
- 2021–Present **Member of the MAGIC Time Allocation Committee.**
- 2021–Present **Member of the LST Time Allocation Committee.**
- 2020–Present **Deep Learning Working Group coordinator of MAGIC.**
- 2020–Present **Speakers and Publications Office member of MAGIC.**
- 2018–Present **Executive Board member of the LST of CTA.**
- 2018–Present **Software Co-Coordinator of the LST of CTA.**
- 2022–2023 **Galactic Working Group Coordinator of LST.**
- 2020–2022 **Galactic Working Group Coordinator of SWGO.**
- 2018–2021 **Galactic Working Group Coordinator of MAGIC.**
- 2014–2015, **Member of the MAGIC Software Board, *MAGIC Collaboration*.**
- 2017–Present

Research projects

Only included those as PI or as Investigator from Spanish institutions.

- 2023-2026. **Title: Astronomía de rayos gamma con CTA-Norte y MAGIC, Proyecto 2 - contribución del IAA-CSIC (PID2022-139117NB-C44).**, *PI: Rubén López Coto*, Amount: 232.375 €, Role: Principal Investigator.
- 2022-2027. **Title: Dotación adicional de contrato Ramón y Cajal de Rubén López Coto (RYC2020-028639-I).**, *PI: Rubén López Coto*, Amount: 42.000 €, Role: Principal Investigator.
- 2022-2025. **Title: Proyecto intramural, Atracción al Talento 2020 (OTR08334 - RYC2020-028639-I).**, *PI: Rubén López Coto*, Amount: 120.000 €, Role: Principal Investigator.
- 2019-2023. **Title: Astronomía de rayos gamma con MAGIC y CTA Norte - contribución del IAA-CSIC (PID2019-107847RB-C44).**, *PI: Iván Agudo*, Amount: 77.500 €, Role: Investigator.
- 2019-2022. **Title: Machine Learning of the Extreme Universe (Marie Skłodowska-Curie grant agreement No. 754496).**, *PI: Rubén López Coto*, Amount: 206.100 €, Role: Principal Investigator.
- 2017-2019. **Title: Cosmic ray studies using VHE gamma-ray observations (Fondi INFN Cap. U.1.04.02.03.001).**, *PI: Rubén López Coto*, Amount: 86.800 €, Role: Principal Investigator.

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2015. **Title:** **Participación Española en el Diseño y Prototipado de CTA (FPA2014-55819-C4-1-P)**., *PI: Abelardo Moralejo*, Amount: 76.500 €, Role: Investigator.
2014. **Title:** **Participación Española en el Diseño y Prototipado de CTA (FPA2013-48381-C6-1-P)**., *PI: Abelardo Moralejo*, Amount: 130.600 €, Role: Investigator.
- 2011-2013. **Title:** **Participación Española en la Fase Preparatoria de CTA (FPA2010-22056-C06-01)**., *PI: Manuel Martínez*, Amount: 528.600 €, Role: Investigator.
- 2010-2012. **Title:** **Astrofísica a la máxima resolución angular (AYA2009-13036-C02-01)**., *PI: Antonio Alberdi*, Amount: 122.210 €, Role: Investigator.

Fellowships, prizes and honours

- **MAGIC Florian Goebel Prize** “for the swift and rigorous analysis and modeling of the observations of the RS Oph August 2021 outburst, leading to the establishment of proton acceleration in recurrent novae”, 2022.
- **Ramón y Cajal fellowship**, 2021.
- **Atracción de Talento senior** de la Comunidad Autónoma de Madrid, 2021 - declined.
- **Marie Skłodowska Curie FELLINI** fellowship, 2019.
- **Seal of Excellence** by the European Commission for the Marie Skłodowska-Curie actions, 2018.
- **NVIDIA winner** of a scholarship for research using GPUs, 2018.
- **PhD extraordinary Prize** by the Universitat Autònoma de Barcelona, 2018.
- Ranked first in the INFN Postdoctoral fellowship program, 2017.
- PhD thesis selected and published on **Springer Theses series**, 2016.
- FPI PhD Fellow, Institut de Física d’Altes Energies, 2011.
- University collaboration scholarship, 2011.
- Erasmus double degree scholarship, 2009.
- Universia-Fernando Alonso scholarship to study abroad, 2009.
- CSIC JAE Intro-Fellow, Instituto de Astrofísica de Andalucía, 2009
- CSIC JAE Intro-Fellow, Instituto de Microelectrónica de Sevilla, 2008
- Excellence scholarship of Madrid Community for the best grades, 2006.
- Honour degree at Computer Programming, Basic Electronics, Electronics, Electrodynamics and Electrodynamics Laboratory.
- Honour degree at high school. Best student of the promotion, 2005.

Major collaborations

- 2019–Present **IXPE Collaboration**, *100 members*,
Associated member.
- 2019–Present **SWG0 Collaboration**, *230 members*,
Activities: Galactic Science, Fundamental Physics.
- 2011–Present **CTA Collaboration**, *1500 members*,
Activities: Galactic physics, simulations and software development.

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- 2010–2015, **MAGIC Collaboration**, 300 members,
 2017–Present Activities: Cosmic ray studies, simulations, software and hardware development.
- 2015–Present **HAWC Collaboration**, 170 members,
 Activities: Outrigger electronics, Galactic physics, Cosmic ray propagation. Full member until 2021, associated member since then..
- 2015–2017 **H.E.S.S. Collaboration**, 260 members,
 Activities: Galactic physics.
- 2009–2010 **SPECTRAP Collaboration**, 25 members,
 Activities: Detector development.

Scientific societies

- 2021–Present **Member of the European Astronomical Society (EAS).**
- 2019–Present **Member of the International Astronomical Union (IAU).**
- 2018–Present **Member of the Spanish Astronomical Society (SEA).**
- 2018–Present **Member of the Società Italiana di Fisica (SIF).**
- 2010–2011 **Member of the German Physical Society (DPG).**

Observation proposals granted

- VHE γ rays More than 300 hours of observations with MAGIC
- X-rays 20 hours of observations with *Swift*
- Optical More than 50 hours of observations with the KVA telescope.
- Radio 2 hours with VLA

Organization of International Conferences or Workshops

- April 2023 **CTAC/O General meeting**, Main organizer, 150 participants, Granada, Spain.
- December 2022 **II HONEST Workshop: PeVatrons and their environments**, Main organizer, 250 participants, (remote).
- July 2022 **44th COSPAR Scientific Assembly**, Scientific Organizing Committee of the Gamma ray session, 500 participants, Athens, Greece.
- January 2022 **I LST Analysis School**, Main organizer, 120 participants, (remote).
- October 2021 **LST Low Energy Workshop**, Main organizer, 50 participants, Munich, Germany.
- July 2021 **ICRC 2021**, Convener of the Gamma Ray Indirect session, 700 participants, Berlin, Germany (remote).
- February 2021 **43rd COSPAR Scientific Assembly**, Convener of the Gamma Ray session, 500 participants, Sydney, Australia (hybrid).
- December 2020 **I HONEST Workshop: Gamma-ray Halos around Pulsars**, Main organizer, 180 participants, Padova, Italy (remote).
- June 2020 **MAGIC Collaboration meeting**, Local organizing committee, 100 participants, (remote).
- October 2019 **First SWGO Collaboration meeting**, Local Organizing Committee, 60 participants, Padova, Italy.
- May 2019 **Wide Field-of-View gamma-ray observatory in the Southern Hemisphere**, Scientific Organizing Committee, 50 participants, Lisbon, Portugal.

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- November 2018 **LST Analysis Bootcamp**, *Main Organizer*, 60 participants, Padova, Italy.
- August 2018 **TeVPa 2018**, *Scientific Organizing Committee*, 400 participants, Berlin, Germany.
- September 2016 **HESS Collaboration meeting**, *Local organizing committee*, 100 participants, Heidelberg, Germany.
- April 2016 **Workshop on a wide FoV gamma-ray observatory in the Southern Hemisphere**, *Main organizer*, 20 participants, Heidelberg, Germany.

Main Publications

The list below includes the 25 publications with a short author list as well as collaboration publications signed in alphabetical order in which Rubén López-Coto is corresponding author since he led the publication.

Books

- 2017 Very-high-energy Gamma-ray Observations of Pulsar Wind Nebulae and Cataclysmic Variable Stars with MAGIC and Development of Trigger Systems for IACTs, Springer Theses, DOI: 10.1007/978-3-319-44751-3.

High Impact articles

- 2022 de Oña Wilhelmi, López-Coto, R., et al., *On the potential of bright, young pulsars to power ultra-high gamma-ray sources*, **ApJ Letters**, 930 L2.
- 2022 Sitarek, J., & López-Coto, R., *Gamma rays reveal proton acceleration in nova explosions*, **Nature Astronomy**, Research Briefing, 6, 643-644.
- 2022 Acciari, V., et al. (López-Coto, R. corresponding author), *Proton acceleration in thermonuclear nova explosions revealed by gamma rays*, **Nature Astronomy**, 6, 689-697.
- 2022 López-Coto, R., et al., *Gamma-ray haloes around pulsars as the key to understanding cosmic-ray transport in the Galaxy*, **Nature Astronomy**, 6, 199-206.
- 2018 López-Coto, R., et al., *Undiscovered pulsar in the Local Bubble as an explanation of the local all-electron spectrum*, **Phys. Rev. Lett.**, 121, 251106.
- 2017 Abeysekara, A. U., et al. (López-Coto, R. corresponding author), *Extended gamma-ray sources around pulsars constrain the origin of the positron flux at Earth*, **Science**, 358, 911-914

Articles as one of the main authors

- 2023 de Oña Wilhelmi, López-Coto, R., et al., *High-energy gamma-ray emission powered by a young protostar: the case of S255 NIRS 3*, **MNRAS**, 523, 105D.
- 2021 López-Coto, R., et al. *Prospects for the observation of Primordial Black Hole evaporation with the Southern Wide field of view Gamma-ray Observatory*, **JCAP**, 08, 040.
- 2020 Giacinti, G., Mitchell, A., López-Coto, R., et al. *Halo fraction in TeV-bright pulsar wind nebulae*, **A&A**, 636, A113.
- 2019 Schoorlemmer, H., Hinton, J., López-Coto, R., *Characteristics of extensive air showers around the energy threshold for ground-particle-based gamma-ray observatories*, **EPJC**, 79, 5, 427.
- 2019 Joshi, V., Hinton, J., Schoorlemmer, H., López-Coto, R. & Parsons, D., *A Template-based γ -ray Reconstruction Method for Air Shower Arrays*, **JCAP**, 01, 012.

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- 2018 López-Coto, R. & Giacinti, G., *Constraining the properties of the turbulent magnetic fields in the Geminga region using HAWC VHE γ -ray measurements*, MNRAS, 479, 4526L
- 2018 López-Coto, R. et al., *Effect of the diffusion parameters on the observed γ -ray spectrum of sources and their contribution to the local all-electron spectrum: the EDGE code*, APh, 102, 1-11.
- 2017 Sánchez, R., et al., *Laser spectroscopy measurement of the 2s-hyperfinesplitting in lithium-like bismuth*, JPhB, 50, 8
- 2016 Gascón, D., et al. (López-Coto, R. corresponding author), *Reconfigurable ASIC for Low Level Trigger system in Cherenkov Cameras*, JInst, 11, P11017
- 2016 Ahnen, M., et al. (López-Coto, R. corresponding author), *Observations of the Geminga pulsar and pulsar wind nebula with MAGIC*, A&A, 591, A138
- 2016 López-Coto, R. et al., *The Topo-trigger: A new stereo trigger for lowering the threshold of IACTs*, JInst, 11, P04005
- 2015 Ahnen, M., et al. (López-Coto, R. corresponding author), *Very-high-energy gamma-ray observations of novae and dwarf novae with the MAGIC telescopes*, A&A, 582 A67
- 2015 Cortina, J., López-Coto, R., Moralejo, A. , *MACHETE: A transit Imaging Atmospheric Cherenkov Telescope to survey half of the Very High Energy γ -ray sky*, APh, 72 46-54
- 2014 Lochmann, M., et al., *Observation of the hyperfine transition in lithium-like bismuth $^{209}\text{Bi}^{80+}$: Towards a test of QED in strong magnetic fields*, Phys. Rev. A, 3, 030501
- 2014 Aleksić, J., et al. (López-Coto, R. corresponding author), *Discovery of TeV gamma-ray emission from the pulsar wind nebula 3C 58 by MAGIC*, A&A, 567, L8
- 2014 Aleksić, J., et al. (López-Coto, R. corresponding author), *MAGIC search for VHE gamma-ray emission from AE Aquarii in a multiwavelength context*, A&A, 568, A109
- 2013 Tejedor, L.A., et al., *An Analog Trigger System for Atmospheric Cherenkov Telescope Arrays*, IEEE, 60, 3
- 2013 Hannen, V., et al., *Detection system for forward emitted photons at the Experimental Storage Ring at GSI*, JInst, 09, P09018

Publications

The list below includes the 19 publications in which Rubén López-Coto gave a contribution either through the coordination of working groups, internal refereeing or supervision of the leading author.

Articles as Galactic Convener of MAGIC or LST

- 2023 Acciari, V. A., et al., *Multi-wavelength study of the galactic PeVatron candidate LHAASO J2108+5157*, A&A, 673, A75.
- 2023 Acciari, V. A., et al., *Study of the GeV to TeV morphology of the γ -Cygni SNR (G78.2+2.1) with MAGIC and Fermi-LAT*, A&A, 670, A8.
- 2020 Acciari, V. A., et al., *Detection of the Geminga pulsar with MAGIC hints at a power-law tail emission beyond 15 GeV*, A&A, 643, L14.
- 2020 Acciari, V. A., et al., *MAGIC observations of the diffuse gamma-ray emission in the vicinity of the Galactic center*, A&A, 642, 190.
- 2020 Acciari, V. A., et al., *Studying the nature of the unidentified gamma-ray source HESS J1841-055 with the MAGIC telescopes*, MNRAS, 497, 3734.

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- 2020 Ahnen, M. L. et al., *Statistics of VHE gamma-Rays in Temporal Association with Radio Giant Pulses from the Crab Pulsar*, A&A 634, A25.
- 2019 Ahnen, M. L. et al., *MAGIC and Fermi-LAT gamma-ray results on unassociated HAWC sources*, MNRAS, 485, 356A.
- 2019 Acciari, V. A., et al., *Discovery of TeV γ -ray emission from the neighbourhood of the supernova remnant G24.7+0.6 by MAGIC* MNRAS 483, 4578.
- 2019 Acciari, V. A., et al., *Deep observations of the globular cluster M15 with the MAGIC telescopes*, MNRAS, 484, 2876.

Articles as internal referee of MAGIC/HAWC

- 2023 Eckner, C., et al., *Detecting and characterizing pulsar halos with the Cherenkov Telescope Array*, MNRAS, 521, 3, 3793.
- 2023 Acciari, V. A., et al., *Search for Gamma-ray Spectral Lines from Dark Matter Annihilation up to 100 TeV towards the Galactic Center with MAGIC*, Phys. Rev. Lett., 130, 061002
- 2020 Acciari, V. A., et al., *MAGIC very large zenith angle observations of the Crab Nebula up to 100 TeV*, A&A, 635, 158.
- 2018 Abeysekara, A. U., *Very-high-energy particle acceleration powered by the jets of the microquasar SS 433*, Nature, 562, 82A
- 2018 Acciari, V. A., et al., *Constraining very-high-energy and optical emission from FRB 121102 with the MAGIC telescopes*, MNRAS, 481, 2479.
- 2017 Abeysekara, A. U., et al. *The 2HWC HAWC Observatory Gamma Ray Catalog*, ApJ, 843, 40A

Articles as PhD supervisor

- 2023 Albert, A., et al., *Detailed Analysis of the TeV γ -Ray Sources 3HWC J1928+178, 3HWC J1930+188, and the New Source HAWC J1932+192*, ApJ, 942, 96.
- 2021 Acciari, V. A., et al., *Search for Very High Energy Emission from the millisecond pulsar J0218+42*, ApJ, 922, 251.
- 2021 Abdalla, H., et al., *TeV emission of Galactic plane sources with HAWC and H.E.S.S.*, ApJ, 917, 6.
- 2021 Albert, A., et al., *Spectrum and Morphology of the Very-High-Energy Source HAWC J2019+368*, ApJ, 911, 143

+ More than 150 collaboration articles. For a complete list go to: <https://scholar.google.com/citations?user=PTdOLtEAAAAJ&hl=en>

ATels

- July 2021 ATel #14783, “Detection of very-high-energy gamma-ray emission from BL Lac with the LST-1”

Presentations

38 invited talks and seminars, 15 conference talks as first author and more than 100 additional conference contributions.

Invited talks

- October 2023 Title: Gamma-ray haloes around pulsars as a key to understanding cosmic-ray transport in the Galaxy. Conference: Exploring Galactic Cosmic Ray accelerators with Ultra High Energy Gamma rays, *Plenary session*, Yerevan (Armenia).
- October 2023 Title: Primordial Black Hole searches in the Very High Energy gamma-ray band. Conference: MAGIC 20 year anniversary, *Plenary session*, La Palma (Spain).
- July 2023 Title: Gamma-ray Rapporteur Talk: a quick walk through the gamma-ray universe. Conference: 38th International Cosmic Ray Conference, *Plenary session*, Nagoya (Japan).
- March 2023 Title: Very High Energy Gamma-ray Astronomy with SWGO: The Southern Wide-Field Gamma-ray Observatory. Conference: Meeting of the Cosmic Ray Division of the Mexican Physical Society, *Plenary session*, Mexico City (Mexico).
- September 2022 Title: Pulsars and their environments. Conference: CTA Spanish Day, *Plenary session*, Madrid (Spain).
- September 2022 Title: TeV halos and related physics. Conference: 108th Meeting of the Italian Physical Society (SIF), Milan (Italy).
- March 2022 Title: Very-High-Energy gamma-ray detection of RS Oph with the MAGIC telescopes. Conference: 56th Rencontres de Moriond, Moriond (Italy).
- March 2022 Title: The future of gamma-ray astronomy with the Cherenkov Telescope Array. Conference: XIII CPAN days, Huelva (Spain).
- October 2021 Title: Contribution of nearby hidden sources to the cosmic ray all-electron spectrum. Conference: Paris Saclay Astroparticle Symposium 2021, Paris (France).
- August 2021 Title: The MAGIC view of the very high energy gamma-ray sky. Conference: 17th TAUP conference, Valencia (Spain).
- February 2021 Title: The very-high gamma-ray sky seen through MAGIC eyes. Conference: 43rd COSPAR Assembly, Sydney (Australia).
- December 2020 Title: Prospects for gamma-ray halos around pulsars detection with SWGO. Conference: 1st Workshop on Gamma-ray Halos Around Pulsars, *Plenary session*, Padova (Italy).
- November 2019 Title: Dark matter searches using charged cosmic rays. Conference: Dark matter searches in the 2020s conference, *Plenary session*, Kashiwa (Japan).
- September 2018 Title: The MAGIC experiment: results and future prospects. Conference: RICAP 2018 conference, *Plenary session*, Rome (Italy).
- May 2018 Title: Extended VHE gamma-ray sources powered by nearby pulsars and their contribution to the positron flux at the Earth. Conference: CRATER Workshop, *Plenary session*, L'Aquila (Italy).
- September 2016 Title: Very high energy gamma-ray astronomy with HAWC. Conference: RICH 2016 conference, *Plenary session*, Bled (Slovenia).
- September 2014 Title: MAGIC Highlights. Conference: RICAP 2014 conference, *Plenary session*, Noto (Italy).
- August 2014 Title: MAGIC Highlights. Conference: VHEPU 2014 conference, *Plenary session* Quy Nhon (Vietnam).

Invited seminars

- April 2022 Title: Very-High-Energy gamma-ray detection of RS Oph with the MAGIC telescopes. Location: University Tor Vergata, Rome (Italy).

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- March 2022 Title: Deep Learning techniques applied to Very High Energy Gamma-ray Imaging Atmospheric Cherenkov Telescopes., AIIAA seminars, Location: IAA, Granada (Spain).
- June 2021 Title: TeV Halos and their connection to the Leptonic Cosmic Ray flux measured at the Earth. Location: IAA, Granada (Spain).
- April 2021 Title: TeV Halos and their connection to the local Leptonic Cosmic Ray flux. Location: ECAP, Erlangen (Germany).
- October 2020 Title: Primordial Black Holes and other Transient events seen with Very-High-Energy Gamma-ray eyes. Location: INAF, Bologna (Italy).
- June 2020 Title: Pulsars, TeV Halos and their connection to the Leptonic Cosmic Ray flux measured at the Earth. Location: MPP, Munich (Germany).
- January 2020 Title: The Southern Wide-Field Gamma-ray Observatory. Location: IFAE (Barcelona, Spain).
- August 2019 Title: The local positron flux: the role of pulsars. Location: University of Liège (Belgium).
- January 2019 Title: The local positron flux: the role of pulsars. Location: CIEMAT, Madrid (Spain).
- March 2018 Title: Are we living inside a bubble? The answer from nearby pulsars. Location: MPIK, Heidelberg (Germany).
- February 2018 Title: Are we living inside a bubble? The answer from nearby pulsars. Location: DESY, Zeuthen (Germany).
- June 2017 Title: Latest results and future of the wide Field of View gamma-ray astronomy. Location: INFN Padova (Italy).
- June 2017 Title: Are we living inside a bubble? The answer from nearby pulsars. Location: IFAE, Barcelona (Spain).
- June 2016 Title: Latest results and future of the wide Field of View gamma-ray astronomy. Location: Goddard Space Flight Center, Washington (USA).
- April 2016 Title: Very high energy gamma-ray astronomy with the HAWC observatory. Location: MPIK, Heidelberg (Germany).
- January 2016 Title: The non-thermal universe at the highest energies with the Imaging Atmospheric Cherenkov Technique. Location: UNAM, Mexico City (Mexico).
- June 2015 Title: The present and future of TeV gamma-ray astronomy: Discovery of the pulsar wind nebula 3C 58 and MACHETE, a new IACT to survey half of the gamma-ray sky. Location: MPIK, Heidelberg (Germany).
- April 2015 Title: Glimpse to the present and future of TeV gamma-ray astronomy: Discovery of the pulsar wind nebula 3C 58 and MACHETE, a new IACT to survey half of the gamma-ray sky. Location: UCLA, Los Angeles (USA).
- October 2014 Title: The non-thermal universe at the highest energies: TeV gamma-ray astronomy with the MAGIC telescopes. Location: IAA Granada (Spain).
- May 2014 Title: The Topo-trigger: a new concept for stereo trigger for imaging atmospheric Cherenkov telescopes. Location: IFAE, Barcelona (Spain).
- Conference talks
- September 2022 Title: Very-High-Energy gamma-ray detection of RS Oph with the MAGIC telescopes. Conference: XV SEA meeting, Tenerife (Spain).

- June 2022 Title: The relationship between bright pulsars and ultra high energy gamma-ray sources. Conference: European Astronomical Society Annual Meeting 2022, Valencia (Spain).
- November 2021 Title: Prospects for the search for Primordial Black Hole evaporation using the Southern Wide-field Gamma-ray Observatory. Conference: Kashiwa Dark Matter Symposium 2021, Kashiwa (Japan).
- October 2021 Title:Galactic Science with the Southern Wide-field Gamma-ray Observatory. Conference: TeVPa 2021, Chengdu (China).
- July 2021 Title: Physics Performance of the Large-Sized Telescope prototype of the Cherenkov Telescope Array. Conference: ICRC 2021 conference, Berlin (Germany).
- February 2021 Title: An undiscovered pulsar as the origin of the cosmic ray all-electron spectrum. Conference: 43rd COSPAR Assembly, Sydney (Australia).
- November 2020 Title: lstchain: An analysis pipeline for LST-1, the first prototype Large-Sized Telescope of CTA. Conference: ADASS XXX , Granada (Spain).
- November 2020 Title: Search for Primordial Black Hole evaporation using current and next generation very-high-energy gamma-ray facilities. Conference: Less Travelled Path of Dark Matter conference (India).
- August 2019 Title: An undiscovered pulsar in the Local Bubble as an explanation of the local all-electron spectrum. Conference: ICRC 2019 conference, Wisconsin (USA).
- December 2017 Title: Prospects for the detection of electron halos of middle-age pulsars. Conference: SGSO workshop, Buenos Aires (Argentina).
- October 2017 Title: HAWC TeV gamma-ray observations of two extended nebulae surrounding Geminga and PSR B0656+14 constrain the origin of the local positron flux. Conference: Fermi symposium 2017, Garmisch-Partenkirchen (Germany).
- July 2017 Title: Morphological and spectral measurements of 2HWC J1928+177 with HAWC and H.E.S.S. Conference: ICRC 2017, Busan (South Korea).
- November 2016 Title: Astrophysical motivations for the construction of a wide FoV gamma-ray observatory in the southern hemisphere. Conference: Workshop on a wide field of view gamma-ray observatory in the Southern Hemisphere, Puebla (Mexico).
- July 2016 Title: HAWC detection of very extended nearby PWNe powered by old pulsars and their relation to the positrons at the Earth. Conference: Gamma 2016 conference, Heidelberg (Germany).
- August 2015 Title: MACHETE: A transit Imaging Atmospheric Cherenkov Telescope to survey half of the Very High Energy γ -ray sky. Conference: XXIX IAU conference, Honolulu (USA).
- July 2015 Title: Discovery of TeV gamma-ray emission from the pulsar wind nebula 3C 58 by MAGIC. Conference: ICRC 2015, The Hague (Netherlands).
- September 2014 Title: Discovery of TeV Gamma-ray Emission from the Pulsar Wind Nebula 3C 58 by MAGIC. Conference: RICAP 2014 conference, Noto (Italy).
- March 2010 Title: Detector system for hyperfine structure measurements at the Experimental Storage Ring (ESR) at GSI. Conference: 2010 DPG meeting, Bonn (Germany).
- + More than 50 conference proceedings
 - + Several talks at MAGIC, HAWC, HESS, CTA and LST Collaboration meetings

Supervision activities

PhD

- 2023- PhD thesis supervision of J. Méndez Gallego, University of Granada.
- 2018-2022 PhD thesis supervision of A. Spolon. Title: Study of Pulsars and their Environments through Very High Energy Gamma-ray Observations, University of Padova.
- 2015-2019 PhD thesis co-supervision of A. Jardin-Blicq. Title: The TeV γ -ray emission of the Galactic Plane, University of Heidelberg.
- 2015-2019 PhD thesis co-supervision of V. Joshi. Title: Reconstruction and Analysis of Highest Energy γ -Rays and its Application to Pulsar Wind Nebulae, University of Heidelberg.

Master

- 2023-Present Master thesis supervision of J. A. Pérez Calderón, University of Granada (Spain).
- 2023 Master thesis supervision of G. Brunelli. Title: Very-High Energy γ -ray observations of the Geminga pulsar with the LST-1 of CTA, University of Bologna (Italy). Grade: 110L/110.
- 2023 Master thesis supervision of L. Gavira. Title: Systematic Uncertainty studies of the Crab Pulsar spectrum using the LST-1 telescope of the Cherenkov Telescope Array Observatory, University of Granada (Spain). Grade: 10/10.
- 2022-2023 Master thesis supervision of R. Neshat. Title: Crab Analysis and Comparison of RF and CNN method of Reconstruction, IISER Kolkata (India). Grade: A+.
- 2020-2021 Master thesis co-supervision of L. Romanato. Title: Implementation of new Convolutional Neural Network methods for Imaging Atmospheric Cherenkov Telescope analysis and application to the Large-Sized Telescope of CTA, University of Milano Bicocca. Grade: 110L/110.
- 2019-2020 Master thesis supervision of P. Grespan. Title: Convolutional Neural Network data analysis development for the Large Sized Telescope of CTA and broadband study of the blazar 1ES 1959+650, University of Padova. Grade: 110L/110.
- 2018-2019 Master thesis supervision of N. Marinello. Title: Convolutional Neural Network Single-telescope reconstruction for the Large Size Telescope of CTA, University of Padova. Grade: 110/110.
- 2018-2019 Master thesis supervision of E. Mariotti. Title: Deep Learning on MAGIC: a Performance Evaluation for Very High Energy Gamma-Ray Astrophysics, University of Padova. Grade: 110L/110.

Other

- 2023 JAE-Intro supervision of L. Gavira, IAA-CSIC (Spain).
- 2021 Bachelor thesis supervision of S. Fogliacco. Title: A Primordial Black Hole origin of Planet 9 and its observability through dark matter indirect observations with the MAGIC telescopes, University of Padova, Grade: 30/30.
- 2019 Google Summer of Code supervision of Juan Redondo Pizarro.

Referee activities

Journal Referee of Science, Nature Astronomy, Nature Communications, Physical Review Letters, Physical Letters B, Physical Review D, Astrophysical Journal, Astronomy & Astrophysics, Monthly Notices of the Royal Astronomical Society, Astroparticle Physics, Nuclear Instruments and Methods in Physics Research A, Measurements and EPJP Journal.

- March 2023 Member of the PhD Thesis Committee of Leonardo Baroncelli, University of Bologna.
May 2022 Committee member of a Postdoctoral Fellowship at CPPM.
May 2022 Referee of the Marie Curie UNIPhD Doctoral Programme of the University of Padova.
March 2022 Referee of the Proyectos de Generación de Conocimiento 2021 Spanish National Program.
September 2021 Referee of the Italian Research Quality Assurance (VQR) 2015-2019.
February 2021 Member of the PhD Thesis Committee of Nicolò Parmiggiani, University of Modena e Reggio Emilia.
June 2020 Selection Announcement for the Awarding of Research Grants (type A), Department of Physics and Astronomy of the University of Padova.
2020 - Analysis and Quality Assurance referee of MAGIC.
Present
August 2019 Member of the PhD Thesis Committee of Maxim Laletin, University of Liège.
April 2019 Project Referee of the Polish Academy of Science.

Teaching activities

- 2022 Lecturer at the LST Software School.
2021 Lecturer at the Master Course "Laboratory of computational physics" (24 hours), University of Padova, Italy.
2021 Lecturer at the PhD Course "Experimental Methods in Astroparticle Physics" (10 ECTS credits), University of Rijeka, Croatia.
2021 Lecturer at the MAGIC Software School.
2020 - Cultore della materia in "Astrofisica", Department of Physics and Astronomy, Padova, Italy.
Present
2019 Lecturer at the "Multimessenger Data Analysis in the Era of CTA" school, Sexten, Italy.

Research Sojourns

- 2022 Five-Month visiting scientist at IAA-CSIC, Granada (Spain).
2021 Seven-Month visiting scientist at IAA-CSIC, Granada (Spain).
2019-2020 Two 2-week LST-1 shifts as Commissioning leader, La Palma (Spain).
2016 Readout installation for the HAWC upgrade, 1 week, HAWC Site (Mexico).
2016 HESS Data taking shift, 4 weeks, H.E.S.S. site (Namibia)
2016 HAWC Data taking shift, 1 week, HAWC Site (Mexico).
2013-2014 Topo-trigger development, 6 months, MPP, Munich (Germany).
2012 Integration test of the Analog Trigger for CTA, 1 week, Paris (France).

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- 2011 Commissioning of the upgraded MAGIC telescopes, 1 week, La Palma (Spain).
- 2010-2015 Five 3-week data taking shifts as Shift Leader in MAGIC, La Palma (Spain).
- 2009-2010 Three 1-week sojourns for detector tests, GSI, Darmstadt (Germany).
- 2009 Commissioning of a high-voltage divider, 1 week, CERN (Switzerland).

Visitors

- April 2023 Gabriele Panebianco, 13 weeks, Analysis of SGR J1935+2154 with the LST-1.
- October 2021 Iván Agudo, 1 week, LST-1 blazar analysis.
- October 2021 Juan Escudero, 2 weeks, Analysis of BL Lac with the LST-1.
- October 2021 José Enrique Ruiz, 3 weeks, provenance implementation in lstchain.
- July 2019 Abelardo Moralejo, 2 weeks, LST-1 analysis.
- January 2019 Nissim Fraija, 2 weeks, Supernova Remnants.
- January 2019 Yunior Pérez Araujo, 3 weeks, Working on EDGE.
- July 2018 Armelle Jardin Blicq, 4 weeks, HAWC analysis of 2HWC J1928+177.

Outreach activities

Talks and organization of events

- May 2023 “La inteligencia artificial y sus aplicaciones a la astrofísica”. Outreach talk for high-school students. Role: speaker. IES Olontigi, Aznalcázar (Spain).
- September 2022 “Canibalismo estelar en la Vía Láctea”, European Researchers’ Night. Role: speaker. Granada (Spain).
- May 2022 “El Universo Extremo visto con gafas de rayos gamma”. Outreach talk for high-school students. Role: speaker. IES Olontigi, Aznalcázar (Spain).
- April 2022 Live event: #MeetTheMAGICians : Vampire stars!. Role: speaker.
- November 2021 International Cosmic Ray Day. Role: speaker. Legnaro (Italy).
- November 2021 “Astrofísica ad Alta Energia: L’Esplorazione dell’Universo più estremo”, Futuro Remoto 2021. Role: speaker. Naples (Italy).
- June 2021 Event by F. Aharonian: “PeVatron Physics in the context of LHAASO results”. Role: Host. Location: remote.
- November 2020 “Descrizione di uno strumento MAGICo alle isole Canarie”, European Researchers’ Night. Role: organizer and speaker. Padova (Italy).
- November 2020 Speed Date for the European Researchers’ Night, Role: speaker. Bologna (Italy).
- November 2019 International Cosmic Ray Day. Role: speaker. Legnaro (Italy).
- October 2019 Astrochat Night of CTA’s Around the World Program. Role: speaker. Bologna (Italy).

Articles

- Junio 2023 Outreach article in the Summer 2023 SEA newsletter “Primeros resultados del LST-1 de CTA”
- Abril 2023 Outreach event “El Futuro de la Astrofísica de muy altas energías a través del Open Science: Oportunidades con el Cherenkov Telescope Array Observatory (CTAO)”. Role: speaker. Granada (Spain)

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- July 2022 Outreach article in the IAA-CSIC newsletter, number 67: “Las estrellas de neutrones, sus entornos y su papel dentro de nuestra Galaxia”.
- September 2019 European Researchers’ Night, Padova (Italy). Role: speaker.
- March 2015 “El bosón de Higgs y los límites de la física”. Outreach talk for high-school students. Role: speaker. Institut Narcís Xifra, Girona (Spain).
- December 2012 “El bosón de Higgs”. Outreach talk for high-school students. Role: speaker. Col·legi Sant Josep, Tàrraga (Spain).
- Press releases and media coverage
- August 2023 Press release and coverage: “Observations of the Crab Nebula and Pulsar with the Large-Sized Telescope Prototype of the Cherenkov Telescope Array”. Role: main investigator.
- April 2022 Press release and coverage: “MAGIC telescopes detect the explosion of a "vampire" star”. Role: main investigator.
- February 2022 Press release and coverage: “Pulsars could hide one of the keys to understanding how cosmic rays travel”. Role: main investigator.
- June 2020 Press release and coverage: “CTA Prototype LST-1 Detects Very High Energy Emission from the Crab Pulsar”. Role: main investigator.
- December 2019 Press release and coverage: “The LST-1 Detects its First Gamma-Ray Signal”, Role: main investigator.
- November 2017 Press release and coverage: Publication in the Science journal of the article "Extended gamma-ray sources around pulsars constrain the origin of the positron flux at Earth". More info in https://www.pd.infn.it/~rlopez/Press_coverage/index.htm, Role: main investigator.
- Other
- August 2022 Interview in Radio 5: “Viajar por el espacio a través del sonido”.
- May 2022 “Explosión termonuclear en RS Ophiuchi”. Podcast interview Cienciaes.com. Role: speaker.
- April 2022 “Excess of antimatter in the vicinity of the Earth: does a pulsar hold the key to the mystery?”. Interview for Ciel & Espace.
- October 2020 “Best Practices for Colour Blind Friendly Publications and Descriptions" as part of CTA’s Astrodiversity project. Role: document editor.
- 2019 - Present Member of the CTA outreach committee.
- January 2018 “Origen Exótico de los positrones cósmicos”. Podcast interview Cienciaes.com. Role: speaker.

Languages

- Spanish **Native**
- English **Excellent**
- Italian **Excellent**
- Catalan **Excellent**
- German **Very Good**

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French **Good**

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