

## Part A. PERSONAL INFORMATION

First name	Agustín		
Family name	Sánchez Losa		
Gender	Male	Birth date (dd/mm/yyyy)	21/07/1982
Social Security, Passport, ID number	70883969Q		
e-mail	Agustin.Sanchez@ific.uv.es	URL Web	<a href="http://ific.uv.es/~agusanlo">ific.uv.es/~agusanlo</a>
Open Researcher and Contributor ID (ORCID)	<a href="https://orcid.org/0000-0001-9596-7078">0000-0001-9596-7078</a>		

### A.1. Current position

Position	Investigador distinguido - CIDEAGENT		
Initial date	01/04/2021		
Institution	Consejo Superior de Investigaciones Científicas (CSIC)		
Department/Center	Instituto de Física Corpuscular (IFIC)		
Country	Spain	Teleph. number	+34 963543538
Key words	Multi-messenger astronomy, Neutrino telescopes, Experimental Astroparticle Physics		

### A.2. Previous positions

Period	Position/Institution/Country/Interruption cause
01/04/2020 – 31/03/2021	Contrato de investigador postdoctoral asociado, INFN, Bari (Italia)
07/02/2018 – 06/02/2020	Contrato de investigador postdoctoral asociado, INFN, Bari (Italia)
15/10/2015 – 14/10/2017	Beca de investigación postdoctoral, INFN, Bari (Italia)
01/09/2010 – 31/08/2014	Contrato predoctoral F.P.I., IFIC
11/05/2010 – 31/08/2010	Contrato como técnico superior de investigación del CSIC, IFIC

### A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Doctorado en Física con Mención Internacional	Universitat de València	2015
Máster Universitario en Física Avanzada	Universitat de València	2010
Licenciado en Física (Plan 2000)	Universitat de València	2009

## Part B. CV SUMMARY

My research centres around **Experimental Astroparticle Physics** with emphasis on **multi-messenger observations**. In this approach, using the combined detection of different cosmic messengers we gain insights into their common origin. I have also made important contributions to the **design, construction, operation and calibration** of neutrino telescopes.

Detection of **cosmic neutrino** sources would yield key information to understand the mechanisms that originate cosmic rays. The significance that scarce neutrino statistics offer can be notably boosted when another messenger counterpart is foreseen. This is even more relevant when the neutrino emission is expected only during a particular period, improving the source search capabilities up to a factor of 2-3.

During my PhD I searched for ANTARES neutrino correlations with X-ray and gamma-ray emissions from potential cosmic neutrino sources, such as **X-Ray Binaries** and **Active Galactic Nuclei**. For that purpose, I used data from Fermi, SWIFT and MAGIC observatories among others. I developed a Bayesian method to enhance the accuracy of the emission period characterization. My PhD thesis was awarded with **The Global Neutrino Network Dissertation Prize 2016**, granted yearly to the most outstanding thesis in the neutrino telescope projects ANTARES, Baikal-GVD, IceCube and KM3NeT by the Global Neutrino Network.

I continued working on these analyses after my PhD and also applied these methods to analyse ANTARES data during the IceCube neutrino flares observed in association with the blazar **TXS 0506+056**. These works have been presented in 8 contributions at international conferences and published in three scientific articles. My students –three MSc thesis (one on-going), two students in IFIC Summer Schools, one JAE Intro and four PhD thesis (three on-going)– all worked in continuing and expanding with other messengers these analyses in ANTARES and now in KM3NeT.

Angular resolution in neutrino telescopes is critical to determine neutrino excesses coming from a source, for which calibrations play a capital role. In this regard, I played **several key roles in calibration** procedures for both ANTARES and KM3NeT, with a focus on time calibration, crucial for accurate event reconstruction and angular resolution in neutrino telescopes.

From 2010 to 2015, I coordinated the ANTARES time calibration. I developed procedures to carry out these and established monitoring requirements. Since 2020 I am the **coordinator of the calibration working group** (10 persons approx.).

In KM3NeT, I have been leading different time calibrations tasks and have played a crucial role in establishing the calibration procedures for the KM3NeT Detection Units in the dark room, ensuring their smooth implementation for mass production. I have coordinated and unified calibrations across multiple integration sites. As a result of my experience, from 2018 to 2023 I have served as **Calibration Custodian**, a figure that coordinates calibrations and their validity for data taking and analysis. In recognition of my work, the KM3NeT collaboration awarded me with the **Giorgos Androulakis Prize** in 2024 for “exceptional contributions that significantly impacted the success and progress of the project”.

From 2016 to 2021, I served as the **Local Quality Supervisor** at the KM3NeT integration site at **INFN in Bari**. My role was to ensure the necessary quality requirements for the feasibility of KM3NeT. I also actively participated in prototyping and assembling the crucial Base Modules of the detector, and trained other integration sites on this. My contributions helped establish procedures for efficient mass production of this component.

I have wide experience in ANTARES and KM3NeT detector operation, such as **run coordinator**, and have participated in various sea operations. I have done numerous quality studies, including data and database integrity, made software contributions to both collaborations, and held internal editorial board positions. I provided training in calibration and cosmic neutrino analysis techniques and did the internal review of multiple analyses in both collaborations. I have also been a reviewer for the **Swiss National Science Foundation**.

I participate frequently in outreach activities, so far 10 open days and multiple school visits and talks to show my research. I have been part of the organising committee for the VLVnT 2021, the CNID Workshop 2024 and multiple ANTARES-KM3NeT collaboration meetings and dedicated workshops. I have been convener of the ANTARES session in the 17<sup>th</sup> Marcel Grossmann Meeting.

I did long stays in relevant institutes of ANTARES and KM3NeT collaborations: Nikhef (Netherlands); CPPM (France); INFN – Sezione di Bari (Italy) where I accumulated 5 years of postdoctoral experience; IFIC (Valencia) where I did my MSc and PhD and since 2021 I work as **Distinguished Researcher with a CIDEGENT excellence grant**, with the **R3 certificate** obtained in 2023.

## Part C. RELEVANT MERITS

### C.1. Publications

1) “Observation of an ultra-high-energy cosmic neutrino with KM3NeT”, KM3NeT Collaboration, Nature 2025, Vol. 638, p. 376–382. (69 citations, by [inspire-hep](#))

DOI: <https://dx.doi.org/10.1088/1475-7516/2015/12/014>

**Significant contribution:** *I was responsible of the calibration used during KM3-230213A detection, performed the review of the open data and contributed to the internal review of the related analyses.*

2) “Search for muon neutrino emission from GeV and TeV gamma-ray flaring blazars using 5 years of the ANTARES Telescope”, ANTARES Collaboration, Journal of Cosmology and Astroparticle Physics 2015, Vol. 12, p. 014. (32 citations, by [inspire-hep](#))

DOI: <https://dx.doi.org/10.1088/1475-7516/2015/12/014>

**Corresponding author.** *A time-dependent analysis applied to a selection of the most significant flaring blazars with Fermi and TeV Cherenkov telescopes data. Results were compatible with background fluctuations, providing limits on the neutrino fluence.*

3) “Time-dependent search for neutrino emission from x-ray binaries with the ANTARES telescope”, ANTARES Collaboration, Journal of Cosmology and Astroparticle Physics 2017, Vol. 10, p. 019.

(30 citations, by [inspire-hep](#)) DOI: <https://dx.doi.org/10.1088/1475-7516/2017/04/019>

**Corresponding author.** *A time-dependent search of neutrinos from a list of 33 X-ray binaries. Even if no significant detection was found, the derived upper limits constrain the jet parameter space for some astrophysical models.*

4) “The Search for Neutrinos from TXS 0506+056 with the ANTARES Telescope”, ANTARES Collaboration, The Astrophysical Journal Letters 2018, Vol. 863 L30, 5 pp.

(48 citations, by [inspire-hep](#)) DOI: <https://dx.doi.org/10.3847/2041-8213/aad8c0>

**Significant contribution** *producing the results. In this article are presented the results of three different searches for neutrino candidates, associated with the IceCube-170922A event or from the direction of TXS 0506+056, by the ANTARES neutrino telescope. The third one was carried out by me.*

5) “Multimessenger Astronomy with Neutrinos”, F. Salesa Greus & A. Sánchez Losa, Universe 2021, 7(11), 397. (6 citations, by [inspire-hep](#)) DOI: <https://doi.org/10.3390/universe7110397>

**Corresponding author.** *This short review on multi-messenger astronomy with neutrinos is written per invitation together with another colleague.*

6) “Nanobeacon: A time calibration device for the KM3NeT neutrino telescope”, KM3NeT Collaboration, NIM-A 2022, Vol. 1040, 167132. (24 citations, by [inspire-hep](#))

DOI: <https://dx.doi.org/10.1016/j.nima.2022.167132>

**Editorial board.** *This article describes one of the optical beacon devices of the KM3NeT detector for calibration and water property studies.*

7) “A Narrow Optical Pulse Emitter Based on LED: NOPELED”, Diego Real et al. (5<sup>th</sup>/5), Sensors 2022, 22(19), 7683. DOI: <https://dx.doi.org/10.3390/s22197683>

**Corresponding author.** *This article presents a generic multipurpose pulsed LED system, like those used in ANTARES and KM3NeT for calibration.*

8) “Science with Neutrino Telescopes in Spain”, Juan José Hernández-Rey et al. (11<sup>th</sup>/13), Universe 2022, 8(8), 89. DOI: <https://dx.doi.org/10.3390/universe8020089>

**Significant contribution** *to the writing. In this article is reviewed the research performed by the Spanish physics community working in the KM3NeT and ANTARES detectors on neutrino astronomy among other topics related to neutrino telescopes.*

9) “Latest results on high-energy cosmic neutrino searches with the ANTARES neutrino telescope”, A. Sánchez Losa on behalf of the ANTARES Collaboration, UHECR (2018).

DOI: <https://dx.doi.org/10.1051/epjconf/201921003004>

*This contribution was a summary of the status of all ANTARES searches of high-energy cosmic neutrinos.*

10) “Time-dependent search of neutrino emission from X-ray and gamma-ray binaries with the ANTARES telescope”, A. Sánchez Losa on behalf of the ANTARES Collaboration, ICRC (2017).

DOI: <https://dx.doi.org/10.22323/1.301.0971>

*This contribution was a recent update of the sensitivities that ANTARES could achieve with the most up to date dataset on the transient search of high-energy neutrinos from X-ray and gamma ray binaries.*

## C.2. Congress

1) “KM3NeT”, A. Sánchez Losa on behalf of the KM3NeT Collaboration, Lake Louis Winter Institute 2025, Lake Louis (Canada). **Selected speaker for the KM3NeT invited talk.**

Link: <https://indico.global/event/483/contributions/120340/>

- 2) “KM3NeT Time calibration with Nanobeacons”, A. Sánchez Losa, J. Palacios González, F. Salesa Greus, J. Zúñiga Román, D. Real Máñez and D. Calvo Díaz-Aldagalán, on behalf of the KM3NeT Collaboration, ICRC 2023, Nagoya (Japan). **Poster**. DOI: <https://dx.doi.org/10.22323/1.444.1062>
- 3) “Multi-messenger Astronomy with High-Energy Neutrinos”, A. Sánchez Losa, COST "Quantum gravity phenomenology in the multi-messenger approach" Workshop 2022, Naples (Italy). **Invited talk**. Link: <https://indico.capa.unizar.es/event/22/contributions/342/>
- 4) “Follow-up of IceCube alerts with KM3NeT ARCA and ORCA”, J. Palacios González, [9 more authors], A. Sánchez Losa, [4 more authors] on behalf of the KM3NeT Collaboration, Neutrino 2022, Seoul (South Korea). **Poster**. DOI: <https://dx.doi.org/10.5281/zenodo.6805372>
- 5) “KM3NeT/ARCA sensitivity to transient neutrino sources”, J. Palacios González, M. Colomer Molla, F. Salesa Greus and A. Sánchez Losa on behalf of the KM3NeT Collaboration, ICRC 2021, Berlin (Germany). **Poster**. DOI: <https://dx.doi.org/10.22323/1.395.1162>
- 6) “Status and Prospects of Mediterranean Neutrino Telescopes: KM3NeT & ANTARES”, A. Sánchez Losa on behalf of the ANTARES & KM3NeT Collaborations, TEXAS 2019, Portsmouth (England). **Talk**. Link: <https://texas2019.org/x-rays/#P3>
- 7) “Latest results on high-energy cosmic neutrino searches with the ANTARES neutrino telescope”, A. Sánchez Losa on behalf of the ANTARES Collaboration, UHECR 2018, Paris (France). **Talk**. DOI: <https://dx.doi.org/10.1051/epjconf/201921003004>
- 8) “Time-dependent search of neutrino emission from X-ray and gamma-ray binaries with the ANTARES telescope”, A. Sánchez Losa on behalf of the ANTARES Collaboration, ICRC 2017, Busan (South Korea). **Talk**. DOI: <https://dx.doi.org/10.22323/1.301.0971>
- 9) “Time-dependent search of neutrino emission from bright gamma-ray flaring blazars with the ANTARES telescope”, A. Sánchez Losa on behalf of the ANTARES Collaboration, ICRC 2017, Busan (South Korea). **Poster**. DOI: <https://dx.doi.org/10.22323/1.301.0970>
- 10) “Results from the ANTARES Neutrino Telescope”, A. Sánchez Losa on behalf of the ANTARES Collaboration, RICAP 2016, Frascati (Italy). **Talk**. DOI: <https://dx.doi.org/10.1051/epjconf/201713604002>

### C.3. Research projects

- 1) “Multimessenger astronomy in the KM3NeT observatory: gravitational waves, gamma rays and cosmic neutrinos”, ~410 k€, Plan GenT-Modalidad 1, ref. [CIDEAGENT/2020/049](#), regional funding (Comunitat Valenciana, Spain), 2021-2025. Two-year extension up to 2027 with 100 k€ granted. **IP**.
- 2) “Red Española de Física de Ondas Gravitacionales (REDONGRA)”, 65 k€, ref. [RED2024-153735-E](#), “Agencia Estatal de Investigación - Redes de Investigación 2024”, national funding (Spain), 2025-2026. **IP of IFIC’s node**.
- 3) “Search for New Physics and Astrophysics with the KM3NeT neutrino telescope”, ~600 k€, ref. [CIPROM/2023/51](#), “PROMETEO”, regional funding, 2024-2028. Scientific team.
- 4) “Contribución del CSIC al proyecto ESFRI KM3NeT 2.0: impulsando la investigación en astrofísica y física fundamental”, ~100 k€, ref. [INFRA23013](#), “Programa CSIC en Grandes Infraestructuras de Investigación Europeas”, national funding (Spain), 2023-2025. Scientific team.
- 5) “Telescopios de neutrinos para física fundamental y astronomía multi-mensajero (NOSTRUM) en el IFIC”, ~920 k€, ref. [PID2021-124591NB-C41](#), “Programa Estatal para Impulsar la Investigación Científico-Técnica y su Transferencia - Subprograma Estatal de Generación de Conocimiento”, national funding (Spain), 2022-2025. Scientific team.
- 6) “Participación del IFIC en ANTARES Y KM3NET”, ~240 k€, ref. [FPA2012-37528-C02-01](#), “Proyectos de Investigación Fundamental no Orientada 2012”, national funding (Spain), 2013-2015.
- 7) “Participación del IFIC en los telescopios de neutrinos ANTARES Y KM3NET”, ~800 k€, ref. [FPA2009-13983-C02-01](#), “Programa Nacional de Formación de Recursos Humanos de Investigación 2010”, national funding (Spain), 2010-2012.