

Agustín Sánchez Losa

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Curriculum Vitæ

Current Professional Situation

position PhD Student in Astroparticle Physics with a Spanish government grant (FPI BES-2010-033616)
institute IFIC – Instituto de Física Corpuscular (Spain)
group ANTARES – KM3NeT

Education

2014 **PhD in Physics**, *University of Valencia*, co-direction between **IFIC-CPPM**.

(Thesis dissertation defence expected by Autumn 2014)

"Search for High Energy Cosmic Muon Neutrinos from Variable Gamma-Ray Sources and Time Calibration of the Optical Modules of the ANTARES Telescope"

Supervisors: J. J. Hernández-Rey (IFIC) & D. Dornic (CPPM)

2010 **MSci in Advanced Physics**, *University of Valencia*.

"Developing an Automate Procedure for the Time Calibration of the ANTARES Neutrino Telescope"

Supervisor: J. Zúñiga (UV)

2009 **BSc in Physics** (5 years degree), *University of Valencia*.

Research Fields and Highlights

High Energy Experimental Physics • Astro-Particle Physics
Neutrino Telescopes • Transient Analyses • Multi-Messenger Approaches

- Responsible of the time calibration of the ANTARES neutrino telescope.
- Monitoring of the detector time constants, re-calibrations *in situ* by means of optical beacons and developer of the analyses tools.
- Participation in various sea operations of ANTARES and KM3NeT-MEUST.
- Time dependant search of cosmic neutrino sources in ANTARES within a multi-messenger approach:
 - Analyses of Blazars, X-Ray binaries and the Crab Nebula gamma-flares.
 - X-ray, gamma-ray and high energy gamma-ray emissions extracted from data and publications of FERMI, SWIFT, ROSSI, MAXI, MAGIC, HESS and VERITAS detectors.

Stages in Laboratories

1. **CPPM** (*Centre de Physique des Particules de Marseille*), Marseilles (France) (10 months)
2. **Nikhef** (*Nationaal instituut voor subatomaire fysica*), Amsterdam (Netherlands) (2.5 months)
3. **IFIC** (*Instituto de Física Corpuscular*), Valencia (Spain) (3–4 years)

Schools & Workshops

1. **The Universe in light of Planck and BICEP2**: master and doctorate course about cosmology, inflation and experimental observations
Faculty of Physics, Valencia University, Valencia (Spain), 12–16 May 2014
2. **Advanced C++ Course**: Course of the new standards in C++11 and C++14
IFIC, Valencia (Spain), 10–16 April 2014
3. **Statistical Analysis Tools for Particle Physics**: TMVA (Toolkit for Multivariate Data Analysis) workshop within the IDPASC School of Flavour Physics
IFIC, Valencia (Spain), 6–7 May 2013
4. **Workshop on Dark Matter tools and Hands-on Fermi analysis**: FERMI/NASA tools software workshop
IFIC, Valencia (Spain), 22–26 April 2013
5. **ISAPP Paris 2012** (*International School on Astroparticle Physics*)
APC, Paris (France), 2–13 July 2012
6. **SeaTray & AntDST Workshop**: ANTARES internal software workshop
ECAP, Erlangen (Germany), 17–18 September 2011
7. **ISAPP Zaragoza 2010** (*International School on Astroparticle Physics*)
University of Zaragoza, Zaragoza (Spain), 13–22 July 2010

Employment

01/09/2010 - Present | **PhD Fellowship**, IFIC (Spain)
11/05/2010 - 31/08/2010 | **Pre-PhD Contract**, IFIC (Spain)

Computing Skills

C / C++98 / C++11 • Python • Perl • Bash / Shell Scripting
ROOT • Mathematica • SQL • HTML / HTML5 / CSS • T_EX / L^AT_EX

I have used all those languages extensively for my work. Additionally I have learnt and used the **Fermi Science Tools** software, conceived for the processing of the Fermi satellite data, and also familiarized with the astronomic digital file format **FITS** and its analysing with the SAOImage DS9 software. For the ANTARES data analysis I used the **Antares-DAQ** software package and been introduced to the **SeaTray** framework, adapted from the **IceTray** open source, among other internal software tools of ANTARES like **AntDST**.

Language knowledge

English	Professional proficiency	<i>Con conversationally fluent</i>
Spanish	Native proficiency	
French	Elementary proficiency	<i>Basic words and phrases mostly</i>

References

Juan José Hernández Rey
IFIC

ANTARES
ex-deputy spokesman

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Publication List

1. S. Adrián-Martínez et al. (The ANTARES Collaboration)
"Searches for Point-like and Extended Neutrino Sources Close to the Galactic Center Using the ANTARES Neutrino Telescope"
ApJL. Vol. 786 L5, pp. L14–L19 (2014)
2. Hans van Haren and The ANTARES Collaboration
"High-frequency internal wave motions at the ANTARES site in the deep Western Mediterranean"
OCEAN DYNAM. Vol. 64, Issue 4, pp. 507–517 (2014)
3. S. Adrián-Martínez et al. (The ANTARES Collaboration)
"A Search for Neutrino Emission from the Fermi Bubbles with the ANTARES Telescope"
EPJ C. Vol. 74:2701 (2014) [arXiv:1308.5260|astro-ph.HE]
4. S. Adrián-Martínez et al. (The ANTARES Collaboration)
"First results on dark matter annihilation in the Sun using the ANTARES neutrino telescope"
JCAP. Vol. JCAP11, pp. 032 (2013) [arXiv:1302.6516|astro-ph.HE]
5. S. Adrián-Martínez et al. (The ANTARES Collaboration)
"Measurement of the atmospheric ν_μ energy spectrum from 100 GeV to 200 TeV with the ANTARES telescope"
EPJ C. Vol. 73:2606 (2013) [arXiv:1308.1599|astro-ph.HE]
6. S. Adrián-Martínez et al. (The ANTARES Collaboration)
"Search for muon neutrinos from gamma-ray bursts with the ANTARES neutrino telescope using 2008 to 2011 data"
A&A. Vol. 559, A9 (2013) [arXiv:1307.0304|astro-ph.HE]
7. S. Adrián-Martínez et al. (The ANTARES Collaboration)
"Search for a Correlation between ANTARES Neutrinos and Pierre Auger Observatory UHECRs Arrival Directions"
ApJ. Vol. 774:19 (2013) [arXiv:1202.6661|astro-ph.HE]
8. C. Tamburini et al. (The ANTARES Collaboration)
"Deep-Sea Bioluminescence Blooms after Dense Water Formation at the Ocean Surface"
PLOS ONE. Vol. 8, e67523 (2013) [DOI:10.1371/journal.pone.0067523]
9. S. Adrián-Martínez et al. (The ANTARES Collaboration)
"A first search for coincident gravitational waves and high energy neutrinos using LIGO, Virgo and ANTARES data from 2007"
JCAP. Vol. 06, 008 (2013) [arXiv:1205.3018|astro-ph.HE]
10. S. Adrián-Martínez et al. (The ANTARES Collaboration)
"First search for neutrinos in correlation with gamma-ray bursts with the ANTARES neutrino telescope"
JCAP. Vol. 1303, 006 (2013) [arXiv:1302.6750|astro-ph.HE]
11. S. Adrián-Martínez et al. (The ANTARES Collaboration)
"Search for cosmic neutrino point sources with four year data of the ANTARES telescope"
ApJ. Vol. 760:53 (2012) [arXiv:1207.3105|hep-ex]
12. S. Adrián-Martínez et al. (The ANTARES Collaboration)
"The positioning system of the ANTARES neutrino telescope"
JINST. Vol. 7, T08002 (2012) [arXiv:1202.3894|astro-ph.IM]
13. S. Adrián-Martínez et al. (The ANTARES Collaboration)
"Search for neutrino emission from gamma-ray flaring blazars with the ANTARES telescope"
APh. Vol. 36, Issue 1, pp. 204–210 (2012) [arXiv:1111.3473|astro-ph.HE]

14. S. Adrián-Martínez et al. (The ANTARES Collaboration)
"Measurement of atmospheric neutrino oscillations with the ANTARES neutrino telescope"
PhL B. Vol. 714, Issues 2-5, pp. 224–230 (2012) [arXiv:1206.0645|hep-ex]
15. S. Adrián-Martínez et al. (The ANTARES Collaboration)
"Search for Relativistic Magnetic Monopoles with the ANTARES Neutrino Telescope"
APh. Vol. 35, pp. 634–640 (2012) [arXiv:1110.2656|astro-ph.HE]
16. S. Adrián-Martínez et al. (The ANTARES Collaboration)
"Measurement of the Group Velocity of Light in Sea Water at the ANTARES Site"
APh. Vol. 35, pp. 552–557 (2012) [arXiv:1110.5184|hep-ex]
17. M. Ageron et al. (The ANTARES Collaboration)
"The ANTARES Telescope Neutrino Alert System"
APh. Vol. 35, pp. 530–536 (2012) [arXiv:1103.4477|astro-ph.IM]
18. J. A. Aguilar et al. (The ANTARES Collaboration)
"A method for detection of muon induced electromagnetic showers with the ANTARES detector"
NIM A. Vol. 675, pp. 56–52 (2012) [arXiv:1106.0426|astro-ph.IM]
19. S. Adrián-Martínez et al. (The ANTARES Collaboration)
"First search for point sources of high energy cosmic neutrinos with the ANTARES neutrino telescope"
ApJL. Vol. 743, pp. L14–L19 (2011) [arXiv:1108.0292|astro-ph.HE]

Conference Proceedings

1. **APP (TeVPA/IDM) 2014** | Amsterdam (Netherlands), 23–28 Jun 2014
Talk: "Search of a neutrino signal with the ANTARES telescope based on multi-messenger analyses"
(Proceedings of the Astroparticle Physics 2014).
2. **Bienal 2013** | Valencia (Spain), 15–19 Jul 2013
Talk: "Search for neutrino emission in gamma-ray flaring blazars with the ANTARES telescope"
Proceedings of the XXXIV Reunión Bienal de la RSEF. pp. 326–327
3. **ICRC 2013** | Rio de Janeiro (Brazil), 2–9 Jul 2013
Poster: "Search for neutrino emission of gamma-ray flaring blazars with the ANTARES telescope"
Proceeding published in Brazilian Journal of Physics.
4. **RICAP-13** | Roma (Italy), 22–24 May 2013
Talk: "Transient Point Source Analyses in the ANTARES Neutrino Telescope"
Proceeding published in NIM A. Vol. 742, pp. 195–198 (2014) [arXiv:1311.7596|astro-ph.HE]
5. **VLVnT11** | Erlangen (Germany), 12–14 October 2011
Talk: "Search for neutrino emission in gamma-ray flaring blazars with the ANTARES telescope"
Proceeding published in NIM A. Vol. 725, pp. 60–63 (2013) [arXiv:1204.1447|astro-ph.HE]

Other Achievements

- **13 ANTARES (4 KM3NeT) collaboration meetings** assisted: **13 talks + 3 contributed talks.**
- **4 MANTS Workshops** (Mediterranean & Antartic Neutrino Telescope Symposium) assisted.
- **2nd MultiDark Consolider Workshop** assisted. Santander (Spain), 28–30 June 2010.
- **3 ANTARES shifts** of 1 week each performed.

Public Outreach

- IFIC's open day 24th May, 2014 (**Expociencia 2014**).
- Nikhef's open day 8th October, 2011 (**Open Dag Science Park 2011**).
- Guided visits to the ANTARES laboratory at IFIC (**2014**).