

Curriculum Vitae

Personal Information

Name: Antonio Ambrosone

Gender: Male

Nationality: Italian

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Current Affiliation

University of Naples “Federico II”, Istituto Nazionale di Fisica Nucleare (INFN) sezione di Napoli. Member of the theoretical astroparticle physics group of Naples University (<http://www.astroparticle-th.unina.it/members.html#antonioa>).

Working/Teaching Experiences

- (September- December 2019) Teaching Tutoring at Physics Department “Ettore Pancini” of University of Naples “Federico II”, which consisted in 50 hours of frontal lectures for the students of “Optics and Optometry”.

International Experiences

- **(Ongoing)** PhD Visitor to Niels Bohr Institute Academy- University of Copenhagen, For 3 months (1February-30 April 2023), Visiting Dr. Markus Ahlers’ research group.

Education

- **(Ongoing)** (November 2020-Today) PhD Student (scholarship winner) at Physics Department “Ettore Pancini” of University of Naples “Federico II”. Date of end of PhD: 31 October 2023. Foreseen data of thesis dissertation: By January-February 2024.
- (September 2018-July 2020) Master Degree in Physics at Naples University “Federico II”. Final Grade: 110/110 Cum Laude. Title of the Thesis: Study of Neutrino Emission from Astrophysical Reservoirs. Date of the dissertation: 22nd July 2020
- (September 2015-July 2018) Bachelor Degree in Physics at Naples University “Federico II”. Final Grade: 110/110 Cum Laude. Title of the Thesis: “La Teoria della Misura Secondo L’interpretazione di Copenhagen tra Paradossi ed Esperimenti”. Date of dissertation: 18 July 2018.
- (September 2010- July 2015) High School Graduation at Liceo Scientifico “A. Romita” of Campobasso. Final Grade: 100/100.

Winter, Summer and PhD Schools

- ISAPP School 2022- “Astrophysical Sources of Cosmic Rays” 28 March-8April, University Paris-Saclay
- (14-18 February 2022) “SIGRAV International School 2022- Cosmology: from theory to observation (Online).
- The 5th Azarquel School of Astronomy A bridge Between East and West (15-19 November 2021) (Online)
- (2-6 August 2021) “GeoQuant 2021” Organized by University of Friburg in an Hybrid mode.
- (14-28 June 2021) “Gravitational Waves from Theory to Experiments: the Birth of a New Astronomy” organized by “Scuola Superiore Meridionale” (SSM) in an online mode.
- (15-26 March 2021) “Theoretical Aspects of Astroparticle Physics, Cosmology and Gravitation” organized by “The Galileo Galilei Institute for Theoretical Physics” (Online).
- (1-5 February 2021) “SIGRAV International School 2021: Gravity of Compact Astrophysical Objects and Gravitational Waves” Organized by SIGRAV (Online).
- (6-10 August 2018) “Quantum in the Summer” Organized by Radboud University (Nijmegen).

Membership of International Collaborations

Member of the KM3NeT Collaboration since end of July 2020.

Language Skills

Mother Tongue: Italian

Other Language: English

Reading Skill: C1 Level (204 score)

Writing Skill: C1 Level (193 score)

Speaking Skill: C1 Level (199 score)

Listening Skill: C1 Level (186 score)

- (19 June 2021) Passed at Grade B (Overall Score: 197) at “Certificate in Advanced English” (C1 Level) at “Accademia Britannica” In Campobasso.

Technical Skills

I am highly qualified in working with spreadsheets, specialized in elaborating texts.
Expert in coding models for the non-thermal emissions of astrophysical sources.

Markup Languages: La TeX (advanced)

Programming Languages: Mathematica (advanced level), python (intermediate level), c language (basic level)

Operative systems: Mac Os (advanced level), Windows (advanced)

Awards

- Laura Bassi Scholarship (2021/2022) (as a junior academic) remitted through 500\$ of editorial assistance (Spring 2022)
- Winner of “Buon Compleanno Federico II” prize in 2018 for the excellence of my study programme (8th June 2018).

Conferences and Workshops (With and Without Contributions)

Summary:

- 13 Participations at International Conferences
 - 7 Contributed Talks as main-author (1 In substitution of my PhD Supervisor, 1 On behalf of the KM3NeT Collaboration)
 - Co-author of other 5 Talks
 - Co-author of 2 Posters on behalf of the KM3NeT Collaboration (ICRC 2021 and Neutrino 2022)
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- 6th International Symposium on Ultra High Energy Cosmic Rays, L’Aquila, Italy, 3-7 October 2022. (Author of a 15+5 minute talk)
 - Town Hall KM3NeT Meeting (Catania, Italy, Held in Hybride mode), Attended online. Only participation
 - 12th Cosmic Ray International Seminar – CRIS 2022, Naples, Italy, 12-16 September 2022. (Author of a 15+5-minute talk on behalf of the KM3NeT Collaboration, plus co-author of another talk)
 - Roma International Conference on Astroparticle Physics, RICAP 2022, Rome, Italy, 6-9 September 2022. (Author of a 15+5-minute talk, plus a co-author of another talk)
 - The 27th European Cosmic Ray Symposium (Nijmegen, Radboud University). (Online Participation, Co-author of a talk)
 - Neutrino 2022 (XXX International Conference on Neutrino Physics and Astrophysics) (Co-author of a Poster on behalf of the KM3NeT Collaboration) (30 May- 4 June 2022)
 - Geoquant 2021 (Geometry and Quantization Conference), Hybride-mode conference held by Friburg University, 9-13 August 2021
 - 17th International Conference on Topics in Astroparticle and Underground Physics (TAUP 2021), Online Conference (26 August-3 September 2021) (Author of a 15-minute talk (considered hot-topic) and the corresponding proceeding)
 - 37th International Cosmic Ray Conference (ICRC 2021), Online Conference (12-23 July 2021), Co-author of one talk, one poster and corresponding proceedings.

- Very Large Volume Neutrino Telescope Workshop (VLVNT 2021), Online Conference (18-21 May 2021), Co-author of a talk and the corresponding proceeding.
- First Eucapt Symposium 2021, Online Conference, 5-7 Maggio 2021, Author of a 5-minute talk.
- XIX Workshop on International Neutrino Telescopes, Online Conference 18-26 February 2021, author of a 5-minute talk.
- Cosmic Rays and Neutrinos in the multi-messenger Era, Online Conference, 7-11 December 2020, author of a 30-minute talk (in substitution of my supervisor Dr. Antonio Marinelli)

Publication List

Summary:

- 4 peer-reviewed papers published as main author
- 8 peer-reviewed papers published as collaboration member
- 3 non-refereed papers (1 as a main author and 2 as a collaboration member)
- 7 proceedings as main-author (3 on behalf of the KM3NeT Collaboration)

Papers Published on Peer-reviewed Journals.

Main-Author Papers

- 1) **Antonio Ambrosone**, Marco Chianese, Damiano F.G. Fiorillo, Antonio Marinelli and Gennaro Miele "Observable Signatures of Cosmic-ray Transport in Starburst Galaxies on Gamma-ray and Neutrino Observations", *Monthly Notices of the Royal Astronomical Society*, stac2133, <https://doi.org/10.1093/mnras/stac2133>
- 2) **Antonio Ambrosone, Roberta Calabrese, Damiano F.G. Fiorillo, Gennaro Miele and Stefano Morisi** "Towards baryogenesis via absorption from primordial black holes *Phys. Rev. D* **105**, 045001 – Published 3 February 2022 doi: <https://doi.org/10.1103/PhysRevD.105.045001>
- 3) **Antonio Ambrosone**, Marco Chianese, Damiano F.G. Fiorillo, Antonio Marinelli and Gennaro Miele "Could star-forming galaxies light up the point-like neutrino sky?", *The Astrophysical Journal Letters*, vol. 919, n. 2. Doi: 10.3847/2041-8213/ac25ff/
- 4) **Antonio Ambrosone**, Marco Chianese, Damiano F.G. Fiorillo, Antonio Marinelli, Gennaro Miele and Ofelia Pisanti " Starburst galaxies strike back: a multi-messenger analysis with Fermi-LAT and IceCube data", *Monthly Notices of the Royal Astronomical Society* vol. 503, n.3 4032-4049 (2021).

Papers as a Member of the KM3NeT Collaboration

- 1) KM3NeT Collaboration, **Antonio Ambrosone**, "KM3NeT Broadcast Optical Data Transport System", *JINST* **18** (2023) 02, T02001, DOI 10.1088/1748-0221/18/02/T02001
- 2) Km3NeT Collaboration, **Antonio Ambrosone** , "The KM3NeT multi-PMT optical module", doi: 10.1088/1748-0221/17/07/P07038, *JINST (Journal of Instrumentation)*, Volume 17, July 2022
- 3) Km3NeT Collaboration, **Antonio Ambrosone** "Nanobeacon: "A time calibration device for the KM3NeT neutrino telescope" doi: <https://doi.org/10.1016/j.nima.2022.167132>, published on *Nuclear Instruments and Methods in Physics Research Section A (NIM-A)* ([Volume 1040](#), 1 October 2022, 167132)

- 4) Km3NeT Collaboration, **Antonio Ambrosone** “Implementation and first results of the KM3NeT real-time core-collapse supernova neutrino search” doi: [10.1140/epjc/s10052-022-10137-y](https://doi.org/10.1140/epjc/s10052-022-10137-y), published on The European Physical Journal C (EPJ C) (*Eur.Phys.J.C* 82 (2022) 4, 317)
- 5) KM3NeT and JUNO collaborations, **Antonio Ambrosone** “Combined sensitivity of JUNO and KM3NeT/ORCA to the neutrino mass ordering”, doi: [10.1007/JHEP03\(2022\)055](https://doi.org/10.1007/JHEP03(2022)055), published on Journal of High Energy Physics (JHEP) (*JHEP* 03 (2022) 055).
- 6) Km3NeT Collaboration, **Antonio Ambrosone** “Sensitivity to light Sterile Neutrinos Mixing parameters with KM3NeT/ORCA” eprint: “2107.00344” Published in: Journal of High Energy Physics (JHEP). DOI: [https://doi.org/10.1007/JHEP10\(2021\)180](https://doi.org/10.1007/JHEP10(2021)180)
- 7) Km3NeT Collaboration, **Antonio Ambrosone** “The KM3NeT potential for the next core-collapse supernova observation with neutrinos” eprint: “2102.05977” Published in: *Eur.Phys.J.C* 81 (2021) 5, 445, DOI: [10.1140/epjc/s10052-021-09187-5](https://doi.org/10.1140/epjc/s10052-021-09187-5)
- 8) Km3NeT Collaboration, **Antonio Ambrosone** “Determining the Neutrino Mass Ordering and Oscillation Parameters with KM3NeT/ORCA” The European Physical Journal C Volume 82, Article number: 26 (2022), DOI: [0.1140/epjc/s10052-021-09893-0](https://doi.org/10.1140/epjc/s10052-021-09893-0)

Preprints and Papers Submitted to Peer-reviewed Journals

- 1) **Antonio Ambrosone**, Marco Chianese, Damiano F.G. Fiorillo, Antonio Marinelli and Gennaro, “Starburst Nuclei as Light Dark Matter Laboratories”, eprint: 2210.05685 (submitted to Physical Review Letters) (paper as a main author)
- 2) KMeNeT Collaboration, **Antonio Ambrosone**, “First Observation of the cosmic ray shadow of the Moon and the Sun with KM3NeT/ORCA”, eprint: “2211.08977” (Submitted to EPJC) (Paper as a collaboration member)
- 3) KMeNeT Collaboration, **Antonio Ambrosone**, “Probing Invisible Neutrino Decay with KM3NeT-Orca”, eprint: “2302.02717” (Submitted to JHEP) (Paper as a collaboration member)

Proceedings

- 1) Antonio Marinelli, Antonio Ambrosone, Marco Chianese, Damiano Fiorillo, Gennaro Miele and Ofelia Pisanti, *A new multi-messenger study of starburst galaxies: a closer look to expecting neutrinos*, doi: 10.1088/1742-6596/2429/1/012032, *J. Phys.: Conf. Ser.* **2429** 012032
- 2) **Antonio Ambrosone**, Walid Idrissi Ibsalihin, Antonio Marinelli, Gennaro Miele, Pasquale Migliozzi, Maria Rosaria Musone on behalf of the KM3NeT Collaboration, *KM3NeT Sensitivity for constraining Starburst Galaxies*, doi:10.1088/1742-6596/2429/1/012028, [Journal of Physics: Conference Series, Volume 2429, 12th Cosmic Ray International Seminar - CRIS 2022 12/09/2022 - 16/09/2022 Napoli, Italy](#)
- 3) Antonio Marinelli, **Antonio Ambrosone**, Marco Chianese, Damiano Fiorillo, Gennaro Miele and Ofelia Pisanti, *A new multi-messenger description of starburst galaxies emissions: perspectives for neutrino and gamma-ray observations*, DOI: 10.1002/asna.20220137, *Astronomische Nachrichten* published by Wiley-VCH GmbH

- 4) **Antonio Ambrosone**, Marco Chianese, Damiano F.G. Fiorillo, Antonio Marinelli, Gennaro Miele & Ofelia Pisanti, “ High-Energy Neutrinos from Starburst Galaxies: implications for neutrino astronomy” doi: 10.1088/1742-6596/2156/1/012082, [Journal of Physics: Conference Series, Volume 2156, 17th International Conference on Topics in Astroparticle and Underground Physics \(TAUP 2021\), 26 August-3 September 2021, Valencia](#)
- 5) Idrissi Ibsalikh Walid, **Ambrosone Antonio**, Marinelli Antonio, Gennaro Miele, Migliozi Pasquale, Pisanti Ofelia and Sharma Ankur on behalf of KM3NeT Collaboration “Expectations for the high-energy neutrino detection from starburst galaxies with KM3NeT/ARCA”, Pos, Proceeding of Science, vol. ICRC 2021, p. 1168, doi: 10.22323/1.395.1168
- 6) Marinelli Antonio, **Ambrosone Antonio**, Chianese Marco, Fiorillo Damiano, Miele Gennaro, and Pisanti Ofelia “A novel multimessenger study of Starburst Galaxies: implications for neutrino astronomy”, Pos, Proceeding of Science, vol. ICRC 2021, p. 1232, doi: 10.22323/1.395.1232
- 7) Marinelli Antonio, **Ambrosone Antonio**, Idrissi Ibsalikh Walid, Miele Gennaro, Migliozi Pasquale, Pisanti Ofelia and Sharma Ankur on behalf of the KM3NeT collaboration “KM3NeT/ARCA expectations in view of a novel multimessenger study of starburst galaxies”, e-print: 2108.00176”, Contribution to: 9th Very Large Volume Neutrino Telescopes Workshop 2021 (VLVnT 2021)
- 8) **Antonio Ambrosone**, Marco Chianese, Damiano Fiorillo, Antonio Marinelli, Gennaro Miele, & Ofelia Pisanti. (2021, May). RESERVOIR SOURCES CONTRIBUTION TO THE ASTROPHYSICAL NEUTRINO FLUX - Starburst Galaxies Strike Back: a Multi-Messenger Analysis (Version final). Presented at the XIX International Workshop on Neutrino Telescopes (Neutel 21), Padova (Italy) – online: Zenodo. <http://doi.org/10.5281/zenodo.4748908>

Date

17/04/2023