Prof. Antonio Capone curriculum vitae - December 2024

- Graduated in Physics in 1974.

- 1975/76: "Temporary researcher" at the Rome Section of the National Institute for Nuclear Physics (INFN).

- 1976/81: "Assistant" at the Faculty of Sciences of the "La Sapienza" University of Rome.

- 1981/87: "Confirmed University Researcher" at the "La Sapienza" University.

- 1987/91 "Associate Professor" at the University of Potenza.

- 1991/2001 "Associate Professor" at the "La Sapienza" University of Rome.

- Since 1/11/2001 "Extraordinary Professor" at the Department of Physics of the University of Rome.

- Since 1/11/2004 "Full Professor" at the Department of Physics of the University of Rome.

- Retired from the University of Rome since 11/1/2021 and Research Fellow at the "Department of Physics of Ariel University" (Israel)

Work experiences at international laboratories:

on leave from the University I worked at CERN on several occasions as:

- "Fellowship holder" (1981/83)

- "Staff Member" (1984/87)

- "Scientific Associate" (1994/95).

Teaching.

In the last two decades of service I have taught the courses of "Mechanics" for the three-year degree courses in "Physics" and "Physics and Astrophysics" and of "Particle and Astroparticle Physics" for the Master's degree courses in "Physics" and "Astronomy and Astrophysics".
I have been a member of the Board of the Doctoral School in Physics of the University "La Sapienza" of Rome and since 2012 I have taught the course "Astronomy with High Energy Neutrinos".

- In the A.Y. 1995-2001 I taught the courses of Physics for the Degree Course in "Information Science" and "Physics Experiments III" for the Degree Course in "Physics".

- In the previous academic years, while working at the University of Potenza, I taught courses in "General Physics" and "Theoretical Physics Institutions" for the Degree Course in "Mathematics" and in "Physics Experiments" for the Degree Course in "Chemistry".

Research.

- 1974-1995. I carried out research in numerous experiments using the particle beams of CERN in Geneva: at CERN/ISR (search for magnetic monopoles in "Multi-Gamma" events, search for mesons with charm quarks, detection of events with evidence of "direct single photons", evidence of QCD), with the neutrino beam at West-Hall (CHARM, CHARM-2, CHORUS, tests of the Standard Model of Electroweak Interactions, Neutrino Interactions, Neutrino Oscillations).

- From 1994 to 1998, having proposed to INFN to collaborate with the NESTOR project, I have been national responsible for the Italian participation in the scientific project: this is how my research in the field of astronomy with very high energy neutrinos began.

- Since 1998 I have participated in the Italian NEMO project for the construction of a gigantic underwater Cherenkov apparatus for the detection of very high energy neutrinos of astronomical origin. Since that time I have been the scientific coordinator of the group of physicists from Rome participating in the project.

- Following the agreement between NEMO and ANTARES for the construction of the future "1 km3 neutrino telescope" in the Mediterranean, since 2001 I have participated in the ANTARES

experiment, a submarine Cherenkov telescope for high energy astrophysical neutrinos with dimensions equal to about 1/20 of 1 km3. In particular, I initially collaborated in the creation of a continuous monitoring system, in real time, of the environmental characteristics (temperature, salinity, speed of sound, underwater currents, ...) capable of influencing the performance of the experimental apparatus, then in the analysis of the experimental data.

In the period 2003-2005, thanks to the funding (414 keuro) obtained from MIUR (PRIN-2003) for the project "Technologies development for the detection of Astrophysical Neutrinos in undersea Telescopes". In the framework of this project I also started the development of the underwater acoustic detection for neutrinos with energy > 1018 eV.

- I participated in the drafting of the proposal for the "Design Study" of KM3NeT (2006-2009), funded by Europe under the VI Framework Program (FP6) and I was in charge of coordinating one of the "Work Packages".

- I subsequently participated in the drafting of the proposal for the "Preparatory Phase" of KM3NeT (2008-2012), funded by Europe under the VII Framework Program (FP6) and, also for this European project, I coordinate one of the "Work Packages". In the following years I have continued the research/development work on underwater acoustic detection techniques of highly energetic neutrino interactions. In 2011 the project "Development of a compact acoustic source, based on piezoelectric ceramics, for the calibration of a network of underwater acoustic sensors", of which I was P.I., was funded by the University "La Sapienza" with 12k€.

At the end of 2011, within the "Piano Operativo Nazionale Ricerca e Competitività 2007-2013" a project for the construction of a first part of the underwater Cherenkov Telescope KM3NeT was approved and funded: this project includes the construction of the underwater infrastructure necessary for the Cherenkov Telescope and of some Detection Units before the end of 2014.
In March 2013 a prototype of "Detection Unit", a Tower, was positioned in the Capo Passero site at 3500m depth. It was maintained in data acquisition, with great success, until the summer of 2014. In May 2014 a prototype of a different type of Detection Unit (a String equipped with multi-PMT Optical Modules) was positioned at the same site.

- 2012-2015. The Italian Collaboration, in May 2012 elected me as national manager of the experiment, a role I held until June 2015. - 2015. As Principal Investigator I proposed the project "Development of a GPU-based system for fast analysis of real time data streams" funded (10k€) by the University "La Sapienza".

- In 2015 I started a scientific collaboration with the international Collaboration LHAASO aiming at the construction of a detector, with a large surface (more than 1km2) of cosmic rays and high energy photons.

- 2016. I proposed, as PI, an agreement with the University of Sao Paulo (Brasil) for the project "Multi-messenger approach to the search for astrophysical sources of very high energy Cosmic Rays", the project was funded (5.5k€) by the University "La Sapienza". 2016 Responsible for a request for funding (obtained 9k€ from the University "La Sapienza") for the visiting professor Prof. Manuela Vecchi from the University of Sao Paulo (Brasil).

- 2016. As Principal Investigator I proposed the project "Characterization and test of a parametric acoustic source for the calibration of a network of underwater acoustic sensors" funded (13k€) by the University "La Sapienza".

- In 2018, the project "Study of transient astrophysical sources of neutrinos and low and high energy photons with a multimessenger approach" of which I am P.I. was funded by the University "La Sapienza" with 4keuro.

- In 2019, the project "Characterization of impulsive astrophysical sources of high energy photons (GRB, AGN, Magnetars, ...) and gravitational waves: estimation of the expected neutrino fluxes from such sources" of which I am P.I. was funded by the University "La Sapienza" with

14+23.8keuro. Since 2019 Member of the Steering Committee of the Amaldi Research Center (La Sapienza, Rome).

- 2020. As PI I proposed an agreement between the University "La Sapienza" and ORT-Braude College (Israel) for the development of the project "Multimessenger Probes of Hidden High-energy Astrophysical Sources": the project was funded (5k€) by the University "La Sapienza".

- 2018-2021 the Minister of Education, University and Research with the decree 2956 appointed me as a member of the Commission for the National Scientific Qualification for the competitive sector 02/A1, Experimental Physics of Fundamental Interactions.

- After my retirement (November 2021) I continue my research activity as Research Associate for Istituto Nazionale Fisica Nucleare, Roma and as Research Fellow in the Department of Physics at Ariel University, Ariel, 40700, Israel.

Scientific Productivity, bibliometric evaluation according to http://inspirehep.net with the command: find a capone AND (t neutrino or t km3net or t ANTARES or t NEMO or t CHARM or t MASS or t CHORUS):

- total number of articles in print (published or on arXiv) 252;
- total number of citations 14223;
- average number of citations per article 56.4
- H index 69

According to "scopus" with a similar selection command the obtained result is:

- total number of articles in print (published or on arXiv) 331;

- total number of citations 13363;

- H index 55

https://www.scopus.com/authid/detail.uri?authorId=35434659900

I have presented many invited seminars and contributions to International Conferences.

Conferences Organization

- I organized, in the years 2004-2008, the sessions dedicated to "Astroparticle and Underground Experiments" for the ICATPP conference.

- In 2007 I organized and chaired the first edition of the International Conference "Roma International Conference on Astroparticle Physics", (RICAP-07, 20-22 June 2007), the Conference took place at the Aula Magna and the Department of Physics of the University "La Sapienza".

- In 2008 I organized and chaired, at the Department of Physics of the University "La Sapienza", the International Workshop "Acoustic and Radio EeV Neutrino detection Activities, (ARENA-2008, 25-27 June 2008.

- In 2013 I organized and chaired the fourth edition of the International Conference "Roma International Conference on Astroparticle Physics", (RICAP-13, 22-24 May 2013) which took place at the Department of Physics of the University "La Sapienza".

- In 2015 I organized and chaired the seventh edition of the International Conference "Very Large Volume neutrino Telescopes", (VLVnT-15, 14-16 September 2015) which took place at the Department of Physics of the University "La Sapienza".

- 2016 I collaborated, also with the role of Editor, in the organization of 6th "Roma International Conference on Astroparticle Physics", (RICAP16, 21st – 24th June 2016).

- 2018 I collaborated, also as Editor, in the organization of 7th "Roma International Conference on Astroparticle Physics", (RICAP18, 4th – 7th September 2018)

- 2022 I organized and chaired the eighth edition of the International Conference "Roma International Conference on Astroparticle Physics", (RICAP-22, 6-9 September 2022) which took place at the Department of Physics of the University "La Sapienza".

- 2024 I collaborated, also as Editor, in the organization of the ninth edition of the International Conference "Roma International Conference on Astroparticle Physics", (RICAP-24, 23-27 September 2024) which took place at Villa Tuscolana, Frascati.

Roma 29 December 2024

Antomo Copone