XII International Conference on New Frontiers in Physics



Contribution ID: 60

Type: Talk

The ANTARES detector, the first undersea neutrino telescope

Wednesday, July 19, 2023 11:50 AM (25 minutes)

ANTARES was the first undersea neutrino telescope. Its working principle was based on the detection of Cherenkov photons emitted along the path in seawater of relativistic charged particles produced in neutrino interactions in proximity of the detector.

It operated in its full configuration from May 2008 up to February 2022, at about 2500 m below the surface of the Mediterranean Sea, in front of the southern French coast. The location of ANTARES offered a privileged point of view for the observation of the southern sky through neutrino-induced upgoing muons. Its geometrical configuration was optimised for neutrinos of Galactic origin with energies below 100 TeV.

Different strategies were used to search for cosmic neutrinos: looking for a directional excess from a preselected list of more than hundred astrophysical candidates, searching for an excess of high-energy events over the atmospheric background, without assumptions about the source position, and an intense activity in the framework of a rich multi-

messenger program to search for neutrinos in coincidence with transient astrophysical events.

ANTARES has studied atmospheric muon neutrino disappearance due to neutrino oscillations, and has put constraints on 3+1 neutrino models. It also searched for neutrino fluxes due to the annihilation of dark matter particles trapped inside astrophysical objects.

In this contribution, results using the almost complete ANTARES data sample are presented, together with a short discussion about the perspectives on the future Mediterranean neutrino telescopes, KM3NeT.

Is this abstract from experiment?

Yes

Name of experiment and experimental site

ANTARES

Is the speaker for that presentation defined?

Yes

Details

Prof. Annarita Margiotta, Dipartimento di Fisica e Astronomia, Università di Bologna and INFN - Sezione di Bologna - Italy

Internet talk

Yes

Author: MARGIOTTA, Annarita (Universita e INFN, Bologna (IT))

Presenter: MARGIOTTA, Annarita (Universita e INFN, Bologna (IT))

Session Classification: Cosmology, Astrophysics, Gravity, Mathematical Physics

Track Classification: Main topics: Cosmology, Astrophysics, Gravity, Mathematical Physics