

Recent Results from the ANTARES Neutrino Telescope

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The ANTARES deep sea neutrino telescope, installed at the bottom of the Mediterranean Sea, has been continuously taking data for more than ten years. Thanks to its excellent angular resolution in both the muon channel and the cascade channel (included by all neutrino flavours), ANTARES offers unprecedented sensitivity for neutrino source searches in the Southern sky in the TeV-PeV energy range, so that already valuable constraints have been set on the origin of the cosmic neutrino flux discovered by the IceCube detector.

Assuming various spectral indexes for the energy spectrum of neutrino emitters, the Southern sky and in particular central regions of our Galaxy are studied searching for point-like objects and for several interesting extended regions of emission like the Galactic Plane or the Fermi Bubble. For the first time, cascade events are used for these searches with a median angular resolution of about 3 degrees.

ANTARES is also embedded in a manifold multi-messenger program with radio, optical, X-ray and gamma-ray follow-up observations of promising cosmic neutrino candidates. ANTARES is also looking for neutrino events in spatial and temporal correlation with astrophysical transient sources observed by other instruments, such as AGN flares, Gamma Ray Bursts, Fast Radio Bursts or with the newly discovered gravitational wave signals.

Strong constraints have also been set on the Dark Matter annihilation cross section and the spin dependent WIMP-nucleon cross section from the search of neutrinos potentially produced by annihilations of WIMPs trapped in massive objects such as the Sun and the Galactic Centre. Searches for signals of other exotic physics such as magnetic monopoles and nuclearites are also of interest for ANTARES.

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