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Recent results from the ANTARES deep-sea neutrino telescope

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The ANTARES experiment has been running in its final configuration since 2008. It is the largest neutrino telescope in the Northern hemisphere. After the discovery of a cosmic neutrino diffuse flux by the IceCube detector, the search for its origin has become a key mission in high-energy astrophysics. Particularly interesting is the indication (although not significant with the present IceCube statistics) of an excess of signal events from the Southern sky region.

The ANTARES sensitivity is large enough to constrain the origin of the IceCube excess from regions extended up to 0.2 sr in the Southern sky. Assuming different 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 extended regions of emission.
The search program also includes multi-messenger analyses requiring time and/or space coincidences with other cosmic probes (cosmic rays, gamma rays or gravitational waves).

ANTARES has also provided results on atmospheric neutrinos and searches for rare particles (such as magnetic monopoles and nuclearites in the cosmic radiation). Of particular note are the searches for Dark Matter: the limits obtained for the spin-dependent WIMP-nucleon cross section overcome that of existing direct-detection experiments.

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