



Recent results of the ANTARES neutrino telescope

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The ANTARES collaboration completed in 2008 the construction of the largest neutrino telescope in the Northern hemisphere. Neutrinos, being neutral, stable and weakly-interacting have unique advantages with respect to other more traditional probes to study the high energy Universe. The scientific scope of ANTARES is very broad, including the observation of astrophysical neutrino sources, the indirect detection of dark matter and more exotic searches like monopoles or nuclearites. The data gathered in the last years has provided a rich output. In this talk I will overview the most relevant results: the skymap of the Southern neutrino sky, with the best flux limits up to date for most of that region; the limits for dark matter searches in the Sun, which are interpreted in the frameworks of MSSM and mUED; an extensive multi-messenger program, which includes search for correlations with GRBs, micro-quasars, UHE cosmic rays of Auger and gravitational waves; searches for monopoles and nuclearites, and the observation of neutrino oscillations (the first time this is measured with a neutrino telescope).

Summary

The ANTARES detector, completed in 2008, is the largest neutrino telescope in the Northern hemisphere. Neutrinos are unique probes to study the high energy Universe. Contrary to photons or cosmic rays, they can travel long distances without being absorbed. Moreover, they pinpoint back to their sources since they are neutral. Being located in the Northern hemisphere, ANTARES enjoys a great visibility of the Galactic Center and most of the Galactic plane. For some of the hottest topics in astroparticles, like the origin of cosmic rays or the mechanisms underlying in some gamma ray sources, neutrinos could provide key information. For the search of dark matter, neutrino telescopes also have unique potential. In particular, a potential signal of high energy neutrinos from the Sun would have a natural interpretation as dark matter, contrary to other indirect searches like those with gamma rays or cosmic rays, where astrophysical interpretations are usually possible. The multi-messenger studies have also a great weight in our scientific program. Results on the search for correlations with GRBs, micro-quasars, Auger UHE CRs or gravitational waves have been made. Other results related to particle physics include the best limits up to date for nuclearites and monopoles. Finally, ANTARES has also measured neutrino oscillations for the first time with a neutrino telescope.

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