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Searches for diffuse fluxes of cosmic neutrinos with the ANTARES telescope

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The ANTARES neutrino telescope, located at a depth of 2475 m under the Mediterranean Sea, 42 km from Toulon, France, consists of a three dimensional array of 885 10-inch photomultiplier tubes, distributed along twelve vertical lines. It is currently the largest operating underwater neutrino telescope and its main goal is to search for high energy neutrinos of cosmic origin.

The search for a cosmic neutrino signal can be addressed to all the different neutrino flavors and interaction channels, as neutrino oscillations are expected to give at Earth equal fluxes for the three neutrino species and the telescope can be used to detect neutrinos undergoing all the weak interaction processes. A cosmic neutrino signal can also either show up in point-like sources or in a diffuse flux coming from unresolved individual objects. The observation of neutrinos from astrophysical sources is a fundamental proof of hadronic acceleration processes of cosmic rays and can give strong informations on the mechanisms working at their production sites.

In this contribution the current status of diffuse fluxes searches using data collected by the ANTARES telescope will be given. In the charged current (CC) νμ channel, data collected from 2008 to 2011 have been used and an upper limit on the flux has been set as the observations are compatible with background expectations. A search for neutrinos from all other interaction channels and flavors, using data from 2007 to 2012 and shower-like events, has also produced an upper limit on cosmic neutrino fluxes.
Large areas of the sky such as the Galactic Centre region or the Fermi Bubbles structure are also predicted to produce a diffuse flux of cosmic neutrinos and the analysis of ANTARES data in the CC νμ channel does not report any significant excess on the expected background, resulting in upper limits on the possible neutrino fluxes from these locations.
In addition a measurement of the atmospheric neutrino energy spectrum from 100 GeV to 200 TeV, irreducible background for cosmic neutrino searches, will be presented.

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