21 July 2021

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# Indirect dark matter searches with neutrinos from the Galactic Centre region with the ANTARES and KM3NeT telescopes

An anomalous flux of neutrinos produced in hypothetical annihilations or decays of dark matter inside a source would produce a signal observable with neutrino telescopes. As suggested by observations, a conspicuous amount of dark matter is believed to accumulate in the Centre of our Galaxy, which is in neat visibility for the Mediterranean underwater telescopes ANTARES and KM3NeT. Searches have been conducted with a maximum likelihood method to identify the presence of a dark matter signature in the neutrino flux measured by the ANTARES neutrino telescope.

ANTARES is in operation underwater offshore from Toulon. It is composed of 12 detection lines with a length of 450 metres, instrumenting about 0.1 $km^2$ of water. The data analysed in this work have been recorded with ANTARES between 2007 and 2020. The KM3NeT infrastrucure hosts a network of underwater telescopes in the Mediterranean Sea. Currently two blocks are in construction, one designed for the collection of atmospheric neutrinos with high statistics, and one to instrument a cubic kilometer to catch astrophysical fluxes. As of today, each of these detectors consists of 6 strings, which are already recording data.

The search for a signature of neutrinos from dark matter annihilations is structured as an hypothesis test. To simulate the signal of annihilating WIMPs, simulated data are weighted with PPPC4 to reproduce the energy spectra, and spatially distributed following the NFW dark matter halo, implemented with CLUMPY. The method used here is an unbinned maximum likelihood.

Results of all-flavour searches for WIMPs with masses from 50 $GeV/c^2$ up to 100 $TeV/c^2$ over the whole ANTARES operation period from 2007 to 2020 are presented here. alongside with the perspective for the KM3NeT telescope, which has its best sensitivities for WIMPs between 10 $TeV/c^2$ and 100 $TeV/c^2$