

WIMP dark matter searches in the Galactic Centre with KM3NeT

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The method of indirect detection of dark matter (DM) particles in neutrino telescopes involves the observation of Cherenkov signals left by their annihilation or decay products. An excess of neutrinos produced by these processes is searched in nearby astrophysical targets such as the Galactic Centre or the Sun, where large amounts of DM are believed to accumulate. The KM3NeT infrastructure, located in abyssal sites of the Mediterranean Sea, is composed of two undersea Cherenkov neutrino telescopes: ORCA, a dense detector optimised for the measurement of low energy neutrinos, and ARCA, a cubic kilometer detector, intended for low fluxes of astrophysical neutrinos. The energy range covered by ORCA allows the study of weakly interacting massive particles (WIMPs) in the 1-100 GeV/c² mass range and ARCA allows to study 500 GeV/c² to 100 TeV/c² DM masses; the analysis is extended to lower masses with respect to other water-based neutrino experiments such as ANTARES and IceCube. In this contribution we present an analysis with an unbinned likelihood method looking for WIMP-like DM annihilations occurring at the Galactic Centre using a partial detector configuration with 6 lines (ORCA-6). Results obtained for higher masses with a partial ARCA configurations (ARCA-6/8/19/21) are also discussed.

Poster prize

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