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Physics beyond the standard model with the ANTARES neutrino telescope

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Neutrinos can be used to probe a vast number of physics phenomena, as in the case of searches for dark matter candidates in astrophysical objects. Dark matter particles can accumulate in massive astrophysical bodies and annihilate into Standard Model particles that can yield neutrinos. To detect neutrinos, large arrays of light sensors located at great depth and in a large volume of transparent material are needed. The ANTARES neutrino telescope has operated for 15 years in the Mediterranean Sea starting in 2007. Neutrino events collected by this telescope have been used to test the Weakly Interacting Massive Particle (WIMP) hypothesis for dark matter in the Galactic Centre, the Sun, the center of the Earth.

Beyond the hypothesis of WIMP dark matter particle, also secluded dark matter models in which dark matter annihilates into mediators which subsequently decay into Standard Model particles, have been investigated. A neutrino telescope can perform searches for other physics signals beyond the Standard Model, and ANTARES has also searched for heavy nuclearites and magnetic monopoles. In this talk an overview of the results achieved by ANTARES in indirect dark matter searches, searches for heavy nuclearites and magnetic monopoles is given.

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