

Indirect Dark Matter searches with the MAGIC Telescopes

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Summary

Dark matter (DM) is one of the most elusive component of the universe. Unveiling its nature represents a fundamental goal for the modern physics. Indirect DM searches are looking for signatures resulting from annihilation and decay of DM particles in highly DM dominated regions, such as the Galactic Centre, clusters of galaxies, and dwarf spheroidal satellite galaxies (dSphs) of the Milky Way. In the cold DM scenario of weakly interacting massive particles (WIMPs), we expect a flux of gamma rays of energies up to the DM mass, tracing back to the source, which could be accessible by Imaging Atmospheric Cherenkov Telescopes (IACTs). Since the beginning of operations, the MAGIC Cherenkov telescopes are carrying out deep observations of several promising highly DM dominated targets with the aim of detecting DM signals or alternatively setting stringent constraints to DM particle models in the TeV mass range. In this contribution we present the main indirect DM search results achieved by MAGIC on several targets, such as galaxy clusters and dwarf satellite galaxies, for which MAGIC reached the strongest constraints on DM annihilation searches above few hundreds of GeV. We also report on the new limits to DM annihilation cross section achieved with a combined analysis of the observation of the Segue 1 dSph with MAGIC and the 6-years observations of 15 dSphs with the Fermi Large Area Telescope (Fermi-LAT), covering the widest DM particle mass range (from 10 GeV up to 100 TeV) ever explored by a single analysis.

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