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Indirect Search for Dark Matter with Cherenkov Telescopes

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In the general WIMP scenario, dark matter (DM) can be seen in gamma-rays because photons can be found in various DM annihilation or decay processes, either as broad-band or line emission or because of secondary processes of charged particles in the final stages of annihilations or decays. The energy range of the former processes is accessible by current ground-based Imaging Atmospheric Cherenkov telescopes (IACTs, like HESS, MAGIC and Veritas). The strengths of this technique are: a) the DM gamma-ray spectra show peculiar features like bumps and cutoff that make them clearly distinguishable from the smoother astrophysical spectra, b) the DM spectrum is universal and therefore by observing two or more DM targets with the same spectrum, a clear identification (besides detection) of DM would be allowed. The role of IACTs may gain more importance in the future as the results at LHC may hint to a DM at the TeV or above, where the IACTs sensitivity is unbeaten by other experiments. In this talk, a review of the search for DM with the current generation of IACTs is presented.

All the above mentioned experiments are now converging into one single large project with tens of Cherenkov telescopes located in both hemispheres, called Cherenkov Telescope Array (CTA), with great expectations for DM searches. An outlook on the performance will be also given.

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