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The Large Magellanic Cloud with the Cherenkov Telescope Array

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Abstract

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The Large Magellanic Cloud (LMC) is a spiral galaxy, satellite of the Milky way with a high star formation activity. It represents a unique laboratory for studying an extended and spatially resolved star-forming galaxy through gamma-ray observatories. Therefore, the LMC survey is one of the key science projects for the Cherenkov Telescope Array (CTA), the next generation ground-based gamma-ray observatory.
In this talk I will present the work performed over the last year by the CTA working group dedicated to the Large Magellanic Cloud, in order to offer a first characterization of the LMC at TeV energies.
We have performed detectability forecasts based on the expected CTA performance for all sources in the region of interest of the LMC with known emission at GeV energies and above. Based on previous observations made by Fermi LAT and H.E.S.S. we have characterized all point sources, extended sources and diffuse emission produced by cosmic-ray propagation, extrapolating their spectra to CTA energies.
Finally, we have characterized the signal expected by different annihilation mechanisms of dark matter particles within the LMC, drawing the detection sensitivity for this target in the mass-cross section plane.

1 See https://www.cta-observatory.org/consortium_authors/authors_2018_08.html
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