

# Detecting and characterising pulsar halos with the Cherenkov Telescope Array

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Pulsar halos constitute a recently identified TeV class of sources that will be observed with the upcoming Cherenkov Telescope Array (CTA), especially in the context of the Galactic Plane Survey (GPS), one of the Key Science Projects of CTA. In this study, we examine the prospects offered by CTA for the detection and characterization of such objects. CTA will cover energies from 20 GeV to 300 TeV, in between those already probed by the Fermi-LAT and the High Altitude Water Cherenkov (HAWC) Observatory, and will also have a better angular resolution than both, allowing us to explore the radial profile of the halos. From simple models for individual pulsar halos and their population in the Milky Way, we examine under which conditions such sources can be identified in the GPS observations, possibly supplemented by additional dedicated exposure. In the framework of a full spatial-spectral likelihood analysis, we derive the sensitivity of CTA by considering both, the general extended emission, and the specific physical pulsar halo model.

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