

Executive summary

Search for Gamma-ray Line emission from Dark Matter annihilation in the Galactic Centre with the MAGIC telescopes

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1. What is this contribution about?

Our contribution is about the search for high-energy gamma ray line emission from dark matter (DM) annihilation at the Galactic Centre (GC) with the MAGIC telescopes.

2. Why is it relevant / interesting?

Indirect dark matter search is a good tool to approach heavy DM model in the TeV-scale, typically, since the necessary energy scales are not accessible to colliders and direct searches, and in that sense, those three techniques are complementary.

3. What have we done?

In this talk, we focused on the line emission from DM annihilation, which is one of the most distinctive spectral features. While the GC is also one of the most promising targets since it is believed to contain an extreme high density of DM, uncertainties of **DM profile (core/cusp) models** are predicted. To deal with this problem, we adapt the sliding window method for the line search analysis to maximize the sensitivity for both profiles. Also, in terms of the GC visibility, we adapted the large zenith angle (LZA) observation technique that takes advantage of our telescope location in the northern hemisphere.

4. What is the result?

We found LZA observations boost the sensitivity for heavy DM beyond 10 TeV mass, and in the end our constraints are competitive or better with previous studies.