

Indirect search for dark matter in the Galactic Centre with IceCube

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Goal

- Improve detection potential for indirect dark matter search in the Galactic Centre with neutrinos experiments

Relevance

- The Milky Way is expected to be embedded in a dark matter halo with increased density towards its centre
- When annihilating or decaying, dark matter is expected to produce standard model particles, which could in turn yield neutrinos
- These neutrinos could be detected by indirect search experiments such as IceCube

Analysis

- Search for an excess of signal neutrino in the direction of the Galactic Centre using a binned likelihood method
- Use low energy event selection which consists of 8.03 years of DeepCore data
- Include information about the opening angle, the energy, and the neutrino flavour in the probability density functions (PDFs)
- Consider dark matter particles with masses ranging from 5 GeV to 1 TeV annihilating through various channels, assuming the NFW or Burkert halo profile

Outcome

- Computed the 90% CL sensitivities for various combination of dark matter halo profile, annihilation channel and mass
- Resulting sensitivities show considerable improvement with previous IceCube results

