



Contribution ID: 76

Type: **not specified**

Dark matter indirect detection limits from complete annihilation pattern

Thursday, 8 September 2022 15:10 (20 minutes)

Cosmological and astrophysical probes suggest that dark matter (DM) would make up for 85% of the total matter content of the Universe. However, the determination of its nature remains one of the greatest challenges of fundamental physics. Assuming the Λ CDM model, Weakly Interacting Massive Particles (WIMPs) would annihilate into Standard Model particles, such as γ rays, which could be detected by ground-based telescopes. Dwarf spheroidal galaxies represent promising targets for such indirect searches as they are assumed to be highly dark matter dominated with the absence of astrophysical sources nearby. So far, previous studies have presented upper limits on the annihilation cross section $\langle\sigma v\rangle$ assuming single exclusive annihilation channels. In this work, we consider more realistic situation and take into account the complete annihilation pattern of the dark matter particle in order to study their impact on the derivation of the upper limits on the dark matter annihilation cross section.

We use mock data for the Cherenkov Telescope Array (CTA) simulating the observations of the promising dwarf spheroidal galaxy Sculptor. We show the impact of considering the full decay pattern within a phenomenologically viable particle physics model.

Summary

Primary authors: Dr HERRMANN, Björn (Lapth); ARMAND, Celine (University of Geneva)

Presenter: ARMAND, Celine (University of Geneva)

Session Classification: Indirect Dark Matter searches