Contribution ID: **166** Type: **oral**

Dark Matter searches with astrophysical probes

Wednesday, 27 July 2022 09:45 (45 minutes)

We live in a golden age for astro-particle physics, with a significant number of experiments actively monitoring high-energy Universe. Many of these probes provide excellent tests of particle physics models of dark matter particles. In particular, experiments such as Fermi -LAT, AMS-02, Ice Cube, ... are significantly cutting into the parameter space of one of the most popular candidates, the WIMPs. In this talk I will describe some of the strategies and methods used to search for dark matter with astrophysical data. Special attention will be given to the latest indications of an unaccounted gamma-ray excess at few GeV in the Fermi-LAT data in the region around the Galactic Centre, which steered lots of attention as it was shown to be consistent with putative signals of WIMP dark matter particles and complementary constraints provided by other experiments. Finally I will discuss projections of the expected sensitivities with upcoming experiments and continued data taking with current ones.

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Session Classification: Invited reviews

Track Classification: invited review