



Contribution ID: 228

Type: **oral**

Search for gamma-ray spectral lines from dark-matter annihilation with the DAMPE satellite

Thursday, 26 September 2024 17:01 (17 minutes)

The annihilation of dark-matter particles may lead to the production of monochromatic gamma-ray emission. In this contribution, the search for spectral lines in the gamma-ray spectrum using eight years of data collected with the space-borne Dark Matter Particle Explorer is presented. To improve the event selection, two machine-learning algorithms were developed and proved to outperform all the standard methods. No line signal is found between 5 GeV and 1 TeV in several regions of interest. The constraint on the velocity-averaged cross-section of the neutralino annihilation is estimated for different dark-matter density profiles and compared with those obtained with the Fermi-LAT data.

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Session Classification: Indirect Dark Matter Detection 2