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# Dark Matter Sensitivity of CALET

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CALET (Calorimetric Electron Telescope), launched to the ISS in August, directly measures the electron+positron cosmic rays flux up to 20 TeV.
With its proton rejection capability of 1 : 10ˆ5 and an aperture of 1200 cmˆ2 sr, it will provide good statistics even well above one TeV, while also featuring an energy resolution of 2%, which allows it to detect fine structures in the spectrum. Such structures may originate from Dark Matter annihilation or decay, making indirect Dark Matter search one of CALET's main science objectives among others, such as identification of signatures from nearby supernova remnants by observation of TeV electrons, and measurement of the heavy nuclei spectra to study the cosmic ray acceleration and diffusion mechanism.
The positron excess in cosmic rays above 10 GeV was initially proposed by the AMS-02 collaboration to originate from an extra power law source with exponential cut-off, which emits an equal amount of electrons and positrons. The latest results from AMS-02 on positron fraction and total electron+positron flux can be fitted with a parametrization including such an extra power law source, which in general may represent nearby astrophysical accelerators or annihilation/decay of Dark Matter. Assuming that the source is a single pulsar, this scenario is extrapolated into the TeV-region and the expected CALET data for this case simulated. Based on this prediction and taking the shape of the Dark Matter annihilation spectrum into account, the sensitivity of CALET to an additional component from Dark Matter annihilation in the galactic halo has been calculated. It is shown that CALET could significantly improve these limits compared to current data, especially for those Dark Matter candidates that feature a large fraction of annihilation directly into electron+positron, such as the LKP (Lightest Kaluza-Klein particle).
The alternative case of Dark Matter annihilation or decay being the primary cause of the positron excess and the prospects of CALET detecting the corresponding Dark Matter signature are discussed as well.

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