

CosmiXs: Cosmic messenger spectra for indirect dark matter searches

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The spectra of stable particles such as photons, positrons, antiprotons and neutrinos are one of the main ingredients to calculate the fluxes of cosmic rays and radiation searched for in indirect detection experiments. The modeling of the whole process is however very complicated since after dark matter annihilation or decay, a number of phenomena occur: including resonance decays, parton showering, hadronization and hadron decays. Therefore the modeling itself cannot be performed from first principles. I will discuss some progress in this direction and present CosmiXs which uses VINCIA to properly model electroweak corrections, and handles the polarization information. I will then move to the modeling of antideuteron and discuss briefly the associated theoretical uncertainties (The dataset can be found in this repo: <https://github.com/ajueid/CosmiXs>)

Talk is based on:

<https://arxiv.org/abs/2411.04815>

<https://arxiv.org/abs/2312.01153>

<https://arxiv.org/abs/2303.11363>

<https://arxiv.org/abs/2202.11546>

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