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DREAMS of Dark Matter Annihilation Signals

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The detection of dark matter presents one of the greatest challenges of modern astronomy.
Possibly one of the most promising avenues is via high energy particles created by dark matter self-annihilation events.
These annihilation events, naturally, depend strongly on the particle physics of the dark matter, but also on the astrophysics of the Universe.
More specifically, the small changes to your assumptions of the density of dark matter within the Milky Way can have a significant impact on the predicted annihilation signal.
In this poster, I will present work done in the DREAMS simulation suite of Milky Way mass galaxies making theoretical predictions for these annihilation signals.
The DREAMS suite is particularly well suited for this analysis as it has systematic variations in astrophysical and dark matter particles.
With these variations, we present a systematic study on the impact of astrophysics variations on your predicted dark matter annihilation signal.
We find that (i) increased supernova feedback can lower your expected annihilation signal, (ii) increased AGN feedback can actually increase your expected signal, and that (iii) warm dark matter does not significantly change your expected signal from cold dark matter.

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