

Searching for Dark Matter Annihilation with IceCube and P-ONE

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We present a new search for weakly interacting massive particles utilizing neutrino telescopes. We consider galactic and extra-galactic dark matter and perform an analysis on ten years of public IceCube data. In addition, we compare these results to the potential sensitivity of a new neutrino observatory, P-ONE. Assuming extremely heavy dark matter self-annihilates and produces neutrinos indirectly or directly, it would produce unique signatures differencing from the typical power-law of the atmospheric and astrophysical background. We use these signatures to show that P-ONE and IceCube can exceed current limits set by gamma-ray experiments, especially when considering extra-galactic dark matter.

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