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Dark Matter search with neutrino telescopes through Angular Power Spectrum

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Dark matter can produce a high-energy neutrino flux through decay or annihilation, that can be observed by current and future neutrino telescopes. The neutrino flux from astrophysical, atmospheric and dark matter origin can be distinguished through their different angular distributions, since the dark matter signal will have some correlation with the galactic center. We use the difference in angular distributions to probe a dark matter signal through an angular power spectrum analysis. We simulate skymaps with through-going muon neutrino events above 60TeV, where we consider both extra-galactic and galactic dark matter contributions. I will show that the angular power spectrum analysis offers a solid and powerful way to assess dark matter signals with current (IceCube) and future (IceCube-Gen2, KM3NeT) neutrino data. KM3NeT is especially sensitive to low dark matter masses due to its visibility towards the galactic center and we further investigate lower energies down to 100GeV.

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