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Current and Future WIMP Searches with Fermi-LAT, HAWC, and SWGO

Wednesday, 13 November 2019 12:00 (30 minutes)

Evidence suggests $\sim 85\%$ of the mass in the Universe is dark matter (DM). Several promising DM theories predict that it is a fundamental particle. The most famous of which is the Weakly Interacting Massive Particle (WIMP). WIMPs that annihilate at a weak-scale cross section that were in thermal equilibrium in the Universe produce the observed DM abundance today. DM particles are theorized to interact and produce standard model particles, like gamma rays. So far, no definitive gamma-ray signal has been detected, but current experiments have started excluding several thermal WIMP models. I will discuss the current status of DM searches with gamma-ray observatories like the Fermi LAT and HAWC. I will also discuss how both future analysis with current observatories and future observatories like CTA and SWGO will probe thermal WIMP models for masses from 5 GeV to ~ 100 TeV.

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