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Search for Dark Matter Subhalos with Fermi-LAT and VERITAS

According to the Standard Model of Cosmology, 83% of the total mass-density of the Universe is in the form of an unknown type of matter referred to as dark matter (DM). DM forms huge halos around galaxies with subhalos within. DM subhalos can be detected by their gamma-ray emissions, caused by the annihilation of Weakly Interacting Massive Particles (WIMPs). The Fermi gamma-ray space telescope measures photons in the 20 MeV to 300 GeV range, making it a good tool for detecting possible DM subhalos. The very high energy gamma-ray telescope VERITAS measures photons in the 100 GeV to 50 TeV range with the Cherenkov imaging technique. VERITAS could be used to fully characterize the spectra of DM subhalos detected by Fermi-LAT. In this research we applied selection criteria to gamma-ray sources from the Fermi-LAT Second Source Catalog to look for potential DM subhalo candidates. We used the Fermi Science Tools provided by NASA to analyze the flux and spectrum of these sources in order to have a more thorough understanding of their nature.