# Mapping Dark Matter Signals

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Little is known about dark matter, which is the matter we cannot see, although it comprises up to 85% of the mass of the universe. Fortunately, today it is hypothesized that dark matter is a type of elementary particle which has the ability of annihilation: where particles annihilate to produce gamma-ray photons, a detectable source of light. The purpose of the project is to map those dark matter photons in a catalog of galactic halo masses, which in theory, is found by squaring the halo mass and also, a map of other astrophysical background signals. With creating these simulated maps, the goal was to differentiate the two maps, testing the validity of the dark matter signal. This project concluded that the two maps that were produced from a catalog of halo masses in the sky showed a clear statistical difference, thus, supporting the hypothesis that this indirect method to find signals is valid. With a valid map of signals from dark matter annihilations, such telescopes that scan for gamma-ray photons in the sky could detect the photons from actual dark matter by using the statistical properties of the dark matter signals from the project.

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