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Searching For Heavy Dark Matter with LMC Modeling

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As the search for dark matter progresses, it is useful to refine past and future searches for heavy dark matter, including for dark matter masses well above a TeV. We show the importance of properly modeling the local dark matter velocity distribution, beyond the standard Maxwellian halo model, and in particular how accurate modeling of the Large Magellanic Cloud and Milky Way impact heavy dark matter searches. As a specific example, we examine the effect of the LMC on heavy dark matter bounds obtained from experiments searching for cosmic rays and magnetic monopoles using plastic etch detectors at the Ohya Mine and aboard the Skylab Space Station.

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