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Cosmic-Ray and Gamma-Ray Line Constraints on Decaying Dark Matter

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We discuss aspects of indirect detection of decaying dark matter and present updated fits to the parameter space in light of the recent AMS-02 measurements of the positron fraction. Leptonic dark matter decay modes can induce higher-order decays involving monoenergetic photons, which may be observed as gamma-ray lines. We examine the resulting interplay between cosmic-ray and gamma-ray constraints and compare observational sensitivities. We also discuss constraints on hadronic decay modes based on earlier measurements of the antiproton/proton ratio by PAMELA.

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