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Indirect detection of sub-GeV dark matter

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Since the WIMP paradigm has dominated for decades, dark matter (DM) in the sub-GeV mass range is only now receiving significant attention. I will discuss indirect detection of such models in light of the recently proposed ComPair experiment, which will increase sensitivity to 1–100 MeV gamma rays by two orders of magnitude. Using a scalar-mediated model as an example, I illustrate how to apply chiral perturbation theory to compute the cross section for dark matter annihilation to pions. I also present the gamma ray spectrum resulting from the subsequent charged and neutral pion decay. Finally, I explain how to perform this analysis for theories with different mediators and discuss cosmological issues.

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