Full Treatment of Electroweak Corrections to Neutralino Annihilation

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Models which have a dark matter candidate that is a Majorana fermion in most cases contain helicity suppressed annihilation processes. Notable examples of such a scenario are models for supersymmetric neutralino dark matter, in which annihilation into a fermion anti-fermion pair is p-wave suppressed. It is well known that the radiation of a gauge boson can lift helicity suppression, enhancing the total annihilation cross section for certain supersymmetric models. We fully investigate the effect of electroweak corrections to neutralino annihilation, including Higgstrahlung contributions. These processes can have a significant effect on both total annihilation rate and final state particle spectra, and are therefore potentially of great importance in determining expected indirect detection rates.