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Studying dark matter with MadDM: Recent developments

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MadDM is an automated numerical tool for the computation of dark-matter observables for generic new physics models based on the Monte Carlo generator MadGraph5_aMC@NLO. Notably, the code provides a comprehensive framework for the reinterpretation of direct and indirect detection searches. For instance, it allows the user to compute the fully differential nuclear recoil rates as well as the energy spectra of photons, neutrinos and charged cosmic rays for arbitrary 2 to n annihilation processes. We report on MadDM v3.2 enabling the automatized computation of loop-induced annihilation processes as well as ongoing developments of its capabilities for direct detection. We showcase their physics applications.

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