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Mono-X Signatures of a Fermionic Dark Matter at the LHC

Searching for absorbed fermionic dark matter by nuclei is being taken more and more attention. In stead of the energy recoil signal at direct detection experiments, dark matter appears always as missing energy at high energy colliders. For such a fermionic dark matter, its production is always accompanied by an invisible neutrino. Mono-X (photon, jet and Z boson) productions are promising channels for probing such event topology. Furthermore, at high energy colliders, a much wider range of the dark matter mass, as long as it is kinematical allowed, can be investigated. In this work, we study model-independent constraints on a generic fermionic dark fermion in the full accessible mass range at the LHC. Interplay between the collider search and the direct detection experiments for a light dark matter is discussed.

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