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The Dark Hypercharge Symmetry

$U(1)$ extension of the Standard Model (SM) is well motivated, where the charges of SM fermions are fixed by gauge anomaly cancellations and Yukawa interactions. The scientific literature extensively covers the study of vector solutions in which SM fermions are vector-like under new $U(1)_X$ symmetry, allowing the Yukawa structure to remain invariant. On the other hand, chiral solutions in which SM fermions are chiral under new symmetry are not well explored. In this work, we venture into these relatively unexplored chiral solutions. We introduced a comprehensive set of chiral solutions for gauge anomaly cancellation, incorporating three right-handed fermions (RHFs) while preserving the SM Yukawa structure. Remarkably, these RHNs emerge as promising candidates for Dark Matter (DM). We will demonstrate in a model-independent manner using only the Z' interaction channel, that the lightest RHF, denoted as F_1, is a viable DM candidate, and it can meet all current DM constraints with a mass of M_{F_1}
$gtrsim$150 GeV.

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