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Exploring Constraints on Simplified Dark Matter Model Through Flavor and Electroweak Observables

Tuesday 28 May 2024 14:00 (15 minutes)

We have considered a simplified dark matter model featuring a spin-0 mediator that contributes to Flavor Changing Charge Current (FCCC) and Neutral Current (FCNC) processes, as well as electroweak observables at the one-loop level. Through a combined fit incorporating all flavor observables of FCNC, FCCC, and EW observables, we constrain the parameter space. This model adequately describes the anomalous W-boson mass, and we discuss the effects on the parameter space for ΔM_W observed by different experiments. Additionally, our model satisfies relevant dark sector constraints such as relic density and indirect detection bounds. Ultimately, we obtain a tightly constrained parameter space that complies with all relevant flavor, electroweak, and dark sector constraints, while remaining within the scope of ongoing direct detection experiments. These bounds also hold relevance for other phenomenological studies.

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