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Vector Dark Matter via a Fermionic Portal from a New Gauge Sector

Thursday 12 January 2023 08:30 (35 minutes)

We suggest a new class of models - Fermionic Portal Vector Dark Matter (FPVDM) which extends the Standard Model (SM) with SU(2)D dark gauge sector. While FPVDM does not require kinetic mixing and Higgs portal, It is based on the Vector-Like (VL) fermionic doublet which couples the dark sector with the SM sector through the Yukawa interaction. The FPVDM model provides a vector Dark Matter (DM) with Z2 odd parity ensuring its stability. Multiple realizations are allowed depending on the VL partner and scalar potential. The FPVDM realization with only a VL top partner and no mixing between SM and new scalar sectors will be discussed as an example together with its implications for DM direct and indirect detection experiments, relic density and collider searches. The talk is based on 2203.04681 and 2204.03510 arXiv papers.

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