

# Phenomenology 2021 Symposium



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## A model of electroweakly interacting non-abelian vector dark matter

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In this talk, we propose a new electroweakly interacting spin-1 dark matter (DM) model. We consider the non-Abelian extension of electroweak symmetry. Namely, we extend the  $SU(2)_L$  group in the Standard Model (SM) into the direct products of three  $SU(2)$  groups. We also impose the exchange symmetry between two of these  $SU(2)$  groups to realize the spin-1 stable spectrum. In this setup, the DM pair efficiently annihilate into SM particles through the electroweak interaction. Therefore, we can obtain the DM energy density correctly via the freeze-out mechanism. We also find not only electroweak processes but also Higgs exchange processes give the relevant contribution to determine the DM energy density. We conclude a next-generation DM searches will be an excellent probe of this spin-1 DM.

### Summary

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