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# Electroweak symmetry breaking and WIMP-FIMP dark matter

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Electroweak Symmetry Breaking (EWSB) is known to produce a massive universe that we live in. However, it may also provide an important boundary for freeze-in or freeze-out of dark matter (DM) connected to the Standard Model via the Higgs portal as processes contributing to DM relic differ across the boundary. We explore such possibilities in a two-component DM framework, where a massive $U(1)_X$ gauge boson DM freezes in and a scalar singlet DM freezes out, which inherits the effect of EWSB for both the cases in a correlated way. Amongst different possibilities, we study two sample cases; first when one DM component freezes in and the other freezes out from thermal bath both necessarily before EWSB and the second when both freeze-in and freeze-out occur after EWSB. We find some prominent distinctive features in the available parameter space of the model for these two cases, after addressing relic density and the recent most direct search constraints from XENON1T, some of which can be borrowed in a model-independent way.

## Session

Beyond the Standard Model

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