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Dark Matter with Composite Mediators

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Summary

We present a model of dark matter where the mediator that connects the dark sector to the Standard Model is tied to electroweak symmetry breaking through the composite Higgs scenario. A non-minimal coset space furnishes pseudo-Nambu–Goldstone bosons that include both the Higgs and the additional gauge-singlet mediator. This contrasts with typical extensions of Higgs portal models in that it does not invoke a two Higgs doublet model while also prescribing a set of couplings between the Higgs and the mediator. While this construction is general, we focus on the simplest non-minimal composite Higgs coset, SO(6)/SO(5). This scenario presents a distinct phenomenology from typical UV-complete models of pseudoscalar mediators and is a novel way to connect composite Higgs models to dark matter.

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