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Non-linear H portal to Dark Matter

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The Higgs portal to scalar Dark Matter is considered in the context of non-linearly realised electroweak symmetry breaking. We determine the dominant interactions of gauge bosons and the physical Higgs particle h to a scalar singlet dark matter candidate. Phenomenological consequences are also studied in detail, including the possibility of distinguishing this scenario from the standard Higgs portal in which the electroweak symmetry breaking is linearly realized. This new context deeply affects the dark matter relic abundance, as well as the expected signals in direct and indirect searches and collider phenomenology, where Dark Matter production rates are enhanced with respect to the standard portal.

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