

First ECFA WORKSHOP.

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Type: **Parallel session talk**

Dark sector in Two Higgs Doublet extensions with a Complex Scalar Singlet [zoom]

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Extension of the Two Higgs Doublet model augmented with a complex scalar singlet (2HDMS) is a well motivated candidate for Beyond Standard Model (BSM) Physics. In this talk, we focus on the dark matter (DM) phenomenology of 2HDMS and investigate cases where the singlet does not obtain a vacuum expectation value (vev) and act as the DM candidate. We also consider the case where the singlet develops a vacuum expectation value (vev) and the pseudoscalar component is the DM candidate. We perform a parameter scan to study the impact of relic density and direct detection scenarios on the model parameter space for both cases. Some representative benchmarks are chosen for the former case and potential signals at future e+e- colliders are presented.

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