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Four-top final states as a probe of Two-Higgs-Doublet models

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Using a CMS measurement of four top (□□¯□□¯) production in proton-proton collisions we constrain the parameter space of BSM scalar models. We study these effects for models with a generic scalar X with couplings to W-bosons and to top-quarks. We use Monte-Carlo simulators and fast detector simulations to recast the CMS analysis in order to obtain upper limits on the cross section times branching fraction for the production modes □□⟶(□□¯,□□,□)+□ with □⟶□□¯, where □ is a new heavy Higgs □, a pseudoscalar □ or mixed CP-state. Furthermore we study the impact on Two-Higgs-Doublet models where four top production places constraints on the low □□□□ region which is of special interest for Baryogenesis.

Orateur: PAASCH, Steven (DESY)

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