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Search for beyond the Standard Model Higgs boson decaying to a pair of new light bosons in boosted dimuon final states SVEN DILDICK, TAMU, CMS COLLABORATION — Light bosons that couple weakly to Standard Model (SM) particles are predicted in several extensions of the SM. These extensions include supersymmetric (SUSY) models with hidden valleys (dark SUSY) or with extended Higgs sector (such as NMSSM). In these scenarios the new light bosons are produced in non-SM Higgs decays or in the cascade of SUSY particles. In dark SUSY the light bosons may also have a non-zero lifetime. If the dark bosons couple to muons this may result in displaced muons in the event signature. While exotic SM Higgs decays can hide in indirect searches, e.g. because the branching ratio is too small, direct searches for light bosons can provide a powerful alternative to understanding the nature of the SM Higgs boson. We present preliminary results at 13 TeV of a direct search for non-SM Higgs boson decays to a pair of new light bosons with boosted dimuons in the final state using the CMS detector.

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