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Recent results from BSM Higgs searches and searches for new light bosons decaying into muon pairs with the CMS detector

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Several models of new physics predict the existence of new light bosons that are weakly coupled to SM particles. Two examples include SUSY with a “dark” sector (in which the new light bosons can also be relatively long-lived) or models with an extended Higgs sector, e.g. NMSSM. In these scenarios, the new bosons can be produced either in the Higgs decays or as part of SUSY cascades. In the presence of either non-SM Higgs couplings or of additional Higgs bosons, these decays could either hide the additional Higgs bosons from standard searches or alter the measured production rates in standard final states of the SM-like Higgs boson observed at the LHC. Direct searches for non-SM decays of the Higgs boson provide a complementary approach to SM Higgs searches and can help further understand the nature of Higgs boson by either confirming or rejecting large classes of BSM scenarios. We present the status and recent results of a search for a non-SM Higgs boson decaying to a pair of new light bosons, each of which subsequently decays into a boosted muon pair, using the LHC data collected by the CMS experiment.

Presenter: WEINBERG, Marc Gabriel (Florida State University (US))

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