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## Searches for extended Higgs sectors with the CMS experiment

*Thursday 22 June 2017 17:00 (15 minutes)*

The observation of a Higgs-like boson with a mass near  $125 \text{ GeV}/c^2$  at the Large Hadron Collider raises a critical question of whether the new particle is in fact the SM Higgs boson. Searches for non-SM Higgs boson production and its decay modes are therefore complementary. I will report the searches for extended Higgs sectors performed with the CMS detector. I will focus on Dark Susy and NMSSM models. Dark Susy predicts cold dark matter at TeV scale and contain a new  $U(1)_D$  symmetry group (broken), giving rise to light dark photons. Depending on the kinetic mixing parameter with the SM, the dark photon can travel before decaying. NMSSM is an extension of the minimal supersymmetric standard model (MSSM) by an additional gauge singlet field under new  $U(1)_{PQ}$  symmetry in the Higgs sector of the superpotential. Compared to the MSSM, the NMSSM naturally generates the mass parameter  $\mu$  in the Higgs superpotential at the electroweak scale and significantly reduces the amount of fine tuning required. The latest CMS results will be discussed.

### Presentation type

Parallel talk

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