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## Searches for extended Higgs sectors with CMS

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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 the NMSSM model, which 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 Higgs sector of the NMSSM consists of 3 CP-even Higgs bosons  $h_{1,2,3}$  and 2 CP-odd Higgs bosons  $a_{1,2}$ .

The latest CMS results, and prospects for Run 2 will be discussed.

### Summary

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