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## Future prospects for Higgs physics at the LHC and beyond

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The analysis of data collected by the CMS experiment at a collision energy of 13 TeV for the Run 2 provided confirmation of the existence of a Higgs boson with a mass of 125 GeV and all the measurements about its properties were found consistent with the Standard Model predictions. Nevertheless a full reality of the Higgs mechanism to give mass to the particles could not be established with the statistics of Run 2 data and at the same time the Run 2 data analysis opened a wide scenario for searches for physics beyond Standard Model, even in the Higgs sector. An upgrade program is planned for the LHC which will smoothly bring the luminosity up to or above  $5 \times 10^{34} \text{ cm}^{-2} \text{ s}^{-1}$  sometime after 2020, to possibly reach an integrated luminosity of 3000 fb<sup>-1</sup> at the end of that decade. For this ultimate scenario, called Phase-2, when LHC will reach the High Luminosity phase (HL-LHC), the CMS detector will be upgraded to fully exploit the highly-demanding operating conditions and the delivered luminosity (giving up to 200 pileup events). Precision measurements in the Higgs sector are planned and prospective studies have been done in the last year to explore the CMS potential in the Higgs sector in the high luminosity scenario of the LHC. The latest results will be summarized in this seminar. In addition new future projects involving larger and more powerful accelerators would provide more precise measurements in the Higgs sector and shed light on the self-couplings of the Higgs boson and more, etc.; current studies will be briefly described

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