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## Properties of the Higgs boson with the $H \rightarrow ZZ \rightarrow 4$ leptons channel

On 2012 July 4th, the CMS and ATLAS experiments reported the discovery of a new boson. The measurement of its properties is now of prime interest to determine whether it's the Standard Model (SM) Higgs or not. In the  $X \rightarrow ZZ \rightarrow 4$  leptons (electrons or muons) channel, the final state can be fully reconstructed and with high precision, thanks to the excellent performances of the CMS detector. It therefore offers a unique opportunity to precisely measure the properties of the new boson. The analysis reported here uses pp collisions data recorded by the CMS experiment at the LHC, corresponding to the full Run I statistics (5.1 fb<sup>-1</sup> at  $\sqrt{s}=7$  TeV, 19.6 fb<sup>-1</sup> at  $\sqrt{s}=8$  TeV). The mass of the new boson is measured. The spin-parity state is studied using Matrix Element methods, where the SM Higgs hypothesis is confronted to other spin-parity hypothesis. Measurement of the cross-sections, relative the SM expectations, from the different production modes, either via fermions (gluon fusion, tH) or vector bosons (VBF, VH) are also reported. All the measurements, still statistically limited, are compatible so far with the production of a SM Higgs boson.

**Primary author:** JEITLER, Manfred (Austrian Academy of Sciences (AT))

**Presenter:** OCHANDO, Christophe (Ecole Polytechnique (FR))

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