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H to WW and ZZ and projected exclusion limits on the SM Higgs boson cross sections

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We present an evaluation of the CMS expected 95\% C.L. exclusion limits in early Higgs boson searches. The results are based on a statistical combinations of multiple recent Monte-Carlo analyses: $H \rightarrow WW^* \rightarrow 2l2\nu$ and $H \rightarrow ZZ^* \rightarrow 4l$ decay channels, where l stands for e or μ. We show that these two channels alone should allow for excluding the Standard Model Higgs boson in the mass range of 140-230 GeV by the time when CMS collects $1\tilde{}\text{fb}^{-1}$ of data at a center-of-mass energy of 14 TeV. We also give an estimate of how the change of the LHC center-of-mass collision energy from 14 to 10 TeV would impact the Higgs boson exclusion limits.

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