



LHC Seminar

SPEAKER: Wouter Verkerke (Nikhef National institute for subatomic physics (NL))

TITLE: **Constraints on Higgs boson couplings from a combination of ATLAS and CMS measurements**

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PLACE: Council Chamber

ABSTRACT

Combined ATLAS and CMS measurements of the Higgs boson production and decay rates as well as constraints on its couplings to vector bosons and fermions are presented. This combination is based on the analysis of five production processes and of the $H \rightarrow ZZ, WW, \gamma\gamma, \tau\tau, bb$ and $\mu\mu$ decay modes using the LHC Run-1 data. After a pedagogical introduction to the Higgs coupling interpretation framework and the combination procedure, the combined Higgs boson production and decay rates of the two experiments are presented within the context of two generic parameterisations: one based on ratios of cross sections and branching ratios and the other based on ratios of coupling modifiers, introduced within the context of a leading-order Higgs boson coupling framework. Several interpretations of the results with more model-dependent parameterisations, derived from the generic ones, are also presented.