

High-mass Higgs search and combined discovery prospects at the LHC

Thursday 16 July 2009 17:00 (20 minutes)

We present the discovery potential of the ATLAS and CMS detectors at the LHC for a neutral Higgs boson decaying to $ZZ()$ $\rightarrow 4$ leptons (electrons or muons) or to $WW()$ $\rightarrow l \nu l' \nu'$ (l or $l' = e$ or μ).

The analysis relies on a full simulation of the detector response and emphasis is put on explicit strategies for the measurement of experimental and background systematics from data.

We also present an evaluation of expected 95% C.L. exclusion limits in early Higgs boson searches. 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 or ATLAS collect 1 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.

Primary author: Ms BOTTA, Cristina (University of Turin and INFN)

Presenter: Ms BOTTA, Cristina (University of Turin and INFN)

Session Classification: III. Higgs and New Physics

Track Classification: Higgs and New Physics