

Diphoton production in pp collision at NLO: Signal analysis

Friday 7 February 2020 11:00 (30 minutes)

The excess in the diphoton spectrum near the invariant mass $M_{\gamma\gamma} = 750$ GeV at LHC late in 2016 generated considerable interest in the scientific community. One of the models that tried to explain this anomaly was a new scalar that can be produced at LHC via gluon fusion, and decays into two photons much like the Standard Model(SM) Higgs boson.

Hereby, my research work consisted of analyzing the Higgs boson production channel, $gg \rightarrow H$, and its two photon decay channel, $H \rightarrow \gamma\gamma$, at tree level to obtain at the end the integrated differential cross section of $gg \rightarrow H \rightarrow \gamma\gamma$. Subsequently, a complete next-to-leading order calculation for $gg \rightarrow H \rightarrow \gamma\gamma$ was presented in order to get precise theoretical predictions which match the accuracy of the experiments.

Author: Ms HAMMOUD, Nadine (Instituteof Nuclear Physics, PAS)

Presenter: Ms HAMMOUD, Nadine (Instituteof Nuclear Physics, PAS)