

Measurement of the ZZ production cross section and search for the standard model Higgs boson in the four lepton final state

Thursday, 15 August 2013 10:50 (20 minutes)

Due to its small branching ratio, the process $p\bar{p} \rightarrow Z/\gamma^* Z/\gamma^* \rightarrow l+l-l'+l'-$ has one of the smallest cross sections in the Standard Model (SM). However, the presence of four isolated leptons in the final state makes this process a very pure one, with a relatively small background. In this work we present a measurement of the cross section $p\bar{p} \rightarrow Z/\gamma^* Z/\gamma^* \rightarrow l+l-l'+l'-$ with up to 9.8 fb^{-1} of data collected with the D0 detector between 2001 and 2011. We also perform a search for SM Higgs boson studying the process $gg \rightarrow H \rightarrow ZZ \rightarrow l+l-l'+l'-$ and the ZH associated production where $H \rightarrow \tau\tau \rightarrow l\nu l\nu$, $H \rightarrow WW \rightarrow l\nu l\nu$, and $H \rightarrow ZZ$ where at least one of the Z bosons decays leptonically.

APS member ID

VA588221

Primary author: MENEZES, Diego (Northern Illinois U.)

Presenter: MENEZES, Diego (NIU)

Session Classification: Electroweak Physics

Track Classification: Electroweak Physics