Abstract

Scientific knowledge of matter and forces at the most fundamental level is described by the collection of theories known as the standard model (SM). The SM has proven to be very successful, yet it is also incomplete because it does not incorporate gravity or provide an explanation for dark matter. Supersymmetry (SUSY) is a popular extension of the SM that provides a candidate for dark matter and perhaps a link to gravity. Finding evidence for supersymmetry or some other extension to the SM is one of the chief goals at the Large Hadron Collider (LHC) at the European Organization for Nuclear Research (CERN). SUSY predicts a partner particle, or superparticle, for each particle in the SM. If they exist, superparticles might be observed when the LHC restarts operation in 2015. I have contributed to the search for SUSY by working on upgrades for the hadron calorimeter (HCAL) detector of the Compact Muon Solenoid experiment at the LHC. The HCAL is one of the main detectors needed for the discovery of a SUSY particle on 2015. In addition, I am looking at detectors needed for the discovery of a SUSY particle on 2015. In addition, I am looking at

Data

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Analysis

Our data looks similar to the “Combination for all institutes on 2015-05-13. The Dilepton invariant mass for our experiment is about the same (120 MeV) [29]. We were able to find Higgs Boson particles from their decayed particles, electron-positron pairs of 2, muon-antimuon pairs of 2 and electron-positron muon-antimuon pairs represented as 4L. The decay of Higgs Boson can also be a photon pair which doesn’t show up in our OPLOT, but showed the Higgs Boson existence. The Higgs Boson 4L decay showed up rarely while the Higgs Boson photon decay showed up much more while interpreting the events. This was done using the HYPATIA program with the ATLAS. This shows that Higgs Boson has been found.

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