

# SEARCH FOR STANDARD MODEL AND NEUTRAL MSSM HIGGS BOSONS DECAYING TO PAIRS OF TAU LEPTONS AT $\sqrt{s} = 7$ TeV

Abstract

By Sean Lynch

A search for neutral Higgs bosons decaying into two tau leptons is presented. The search is performed using data collected by the Compact Muon Solenoid experiment at the Large Hadron Collider during 2011. The data represents pp collisions at a center of mass energy,  $\sqrt{s} = 7$  TeV, and corresponds to an integrated luminosity of  $4.6 \text{ fb}^{-1}$ . This search considers the final state in which one of the tau leptons decays to a muon and neutrinos, and in which the second muon decays into mesons and a single neutrino. Two separate searches are performed: a search for the Standard Model Higgs boson, and a search for neutral Higgs bosons in the Minimal Supersymmetric Standard Model. No excesses are observed above background expectations and upper limits on the cross section times branching ratio is set in both models.