

TSF12-2012-000026

Abstract for an Invited Paper
for the TSF12 Meeting of
the American Physical Society

Higgs Searches at the CMS Experiment at the Large Hadron Collider¹

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The Higgs boson was suggested in mid-1960s within the standard model and has been the subject of numerous searches at accelerators around the world. Its discovery would verify the existence of a complex scalar field thought to give mass to three of the carriers of the electroweak force - the W and Z bosons - as well as to the fundamental quarks and leptons. The CMS Collaboration has identified, with a statistical significance of 5 standard deviations, a new particle in proton-proton collisions at the Large Hadron Collider at CERN. The evidence is strongest in the two-photon and four-lepton (electrons and/or muons) final states which have the best mass resolution in the CMS detector. The probability of the background fluctuating as high as the observed signal is about 1 in 3×10^6 . The new particle is a boson (i.e. a particle with integer spin) with spin different from one, and has a mass of approximately 125 GeV. Its measured properties are, with the present data, consistent with those expected of the Higgs boson.

¹On behalf of the CMS Collaboration