

APR14-2014-000160

Abstract for an Invited Paper  
for the APR14 Meeting of  
the American Physical Society

### **Higgs Results from CMS<sup>1</sup>**

ADOLF BORNHEIM, Caltech

The Nobel Prize in physics 2013 has been awarded to François Englert and Peter W. Higgs for the theoretical discovery of a mechanism that contributes to our understanding of the origin of mass of subatomic particles which plays a crucial role in our understanding of electro-weak symmetry breaking. I will review the experimental results manifesting the discovery of the so called Higgs boson from the perspective of the Compact Muon Solenoid (CMS) collaboration. The review is based on the final results from the proton-proton collision data at 7 TeV and 8 TeV center-of-mass energy, collected in 2011 and 2012 in the initial run of the Large Hadron Collider (LHC) at the European Organization for Nuclear Research (CERN). Results on the properties of the new particle with a mass around 125 GeV, all in agreement with the expectations for the Standard Model (SM) Higgs boson, are highlighted. Latest results on the couplings between the Higgs and fermionic fields, in particular the final results of searches for a Higgs boson decaying into a b-quark or a tau-lepton pair, are presented. Non-SM Higgs searches are briefly summarized. Future perspectives for Higgs physics with CMS at LHC for the next data taking period starting in 2015 and beyond are discussed.

<sup>1</sup>CMS Collaboration