

Abstract Submitted
for the FWS16 Meeting of
The American Physical Society

A collider search for Dark Matter produced in association with a Higgs boson in the four-lepton final state at the 13 TeV LHC with CMS
DUSTIN BURNS, University of California, Davis, CMS COLLABORATION — The unknown particle composition of cosmic dark matter (DM) is one of the greatest mysteries of science. In addition to direct and indirect searches, the detection of DM is attempted after its production in high energy particle colliders. The study presented here is a search for DM produced by 13 TeV proton-proton collisions at the Large Hadron Collider (LHC) using the Compact Muon Solenoid (CMS) detector. The DM escapes the detector undetected, resulting in a large imbalance of transverse momentum, which can be observed when a Standard Model particle is tagged opposite, in this case, the Higgs boson. The discovery of the Higgs boson opens a new portal to the search for DM, with a variety of models motivated by a DM-Higgs interaction, whose signatures are called Mono-Higgs. Preliminary results are shown using data collected by CMS in 2015 for the Mono-Higgs signature with the Higgs decaying to four leptons via two Z bosons, with the continuing analysis of 2016 data outlined.

Dustin Burns
University of California, Davis

Date submitted: 04 Oct 2016

Electronic form version 1.4