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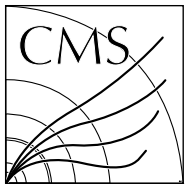

The Compact Muon Solenoid Experiment

Analysis Note

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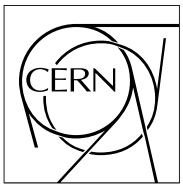

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Search for the standard model Higgs Boson in the decay channel $H \to ZZ \to 2\ell 2q$ at CMS

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Abstract

A search for the standard model Higgs boson decaying to two Z bosons with subsequent decay to a final state with two leptons and two quark-jets, $H \to ZZ^{(*)} \to (q\bar{q})(\ell^-\ell^+)$, is presented. Data corresponding to an integrated luminosity of about XXX fb^{-1} of LHC proton-proton collisions were collected and analyzed by the CMS experiment. The selection to discriminate between signal and background events is based on kinematic and topological quantities, which include the angular spin correlations of the decay products. The events are classified according to probability of the jets to originate from quarks of light or heavy flavor or from gluons. No evidence for a Higgs boson is found and upper limits on the Higgs boson production cross section are set in the range of masses between XXX and XXX GeV, and between 200 and 1000 GeV. Prospects for a Beyond the Standard Model boson exclusion are discussed.