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Updated Search for Standard Model Higgs to WW Production Using up to 8.2 fb⁻¹ at the Tevatron

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We report on the search for Standard Model (SM) Higgs boson to WW production in the final state of two charged leptons (e,μ) and two neutrinos from the collision of p-pbar pairs at $\sqrt{s} = 1.96$ TeV. The data corresponds to 8.2 fb⁻¹ by the CDF II detector and 8.2 fb⁻¹ by the DZero detector on the Tevatron collider at Fermilab. The CDF version of the analysis implemented several improvements over the previous versions reported in the spring. In the CDF update, track and calorimeter isolation quantities for the leptons were recalculated to prevent mutual spoilage when two candidates are in close proximity to each other. Additionally, CDF has introduced a likelihood based category for forward electrons to recover candidates failing the original and still present cut based category. To maximize signal acceptance, events with same-sign dileptons and trileptons are included as separate regions to account for associated Higgs production with a Z or W boson via vector boson fusion. Additionally, the CDF analysis includes events with low dilepton invariant mass are included in a separate region to further improve acceptance. We then set confidence level limits at nineteen Higgs masses between 110 GeV and 200 GeV.

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