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Measurements of WW, ZZ cross section and search for anomalous quartic gauge couplings at D0

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We present measurements of WW and ZZ production cross sections, and anomalous quartic gauge couplings in $p\bar{p}$ collisions at 1.96 TeV with Run II data from 8.6 fb⁻¹ to 9.9 fb⁻¹ collected by the D0 detector at the Fermilab Tevatron Collider. In the WW cross section measurement, the WW \rightarrow ee + MET, WW \rightarrow $\mu\mu$ + MET, and WW \rightarrow e μ + MET decay channels are used to measure the total and differential cross sections for WW production. The measured cross section is consistent with the standard model expectation and differential cross section measurements provide additional information to test higher order predictions. In the ZZ cross section measurement, we examine the final states eeee, ee $\mu\mu$, and $\mu\mu\mu\mu$. Based on selected data the measured cross section for ZZ is consistent with the standard model expectation. We extend these results to search for the standard model Higgs boson between 115 and 200 GeV. We also present a search for anomalous quartic gauge couplings ($\gamma\gamma WW$) using a sample of di-electron events with large missing energy. No excess above the SM background has been observed and limits on the anomalous parameters a_0^W and a_C^W are extracted.

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