

Measurements of the Trilinear Gauge Boson Couplings from Diboson Production at D0

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We present the first observation of the $Z\gamma$ to $\nu\bar{\nu}\gamma$ process at the Tevatron at 5.1 standard deviations significance, based on 3.6 fb⁻¹ of integrated luminosity collected with the D0 detector at the Fermilab Tevatron ppbar Collider at $\sqrt{s} = 1.96$ TeV. The measured $Z\gamma$ cross section multiplied by the branching fraction of Z to $\nu\bar{\nu}$ is 32 ± 9 (stat.+syst.) ± 2 (lumi.) fb for the photon $E_T > 90$ GeV. It is in agreement with the standard model prediction of 39 ± 4 fb. We set the most restrictive limits on anomalous trilinear $Z\gamma\gamma$ and $ZZ\gamma$ gauge boson couplings at a hadron collider to date, with three constraints being the world's strongest.

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