

Abstract Submitted
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Cross Section Measurement for $Z(\gamma) \rightarrow \mu\mu\gamma$ in $p\bar{p}$ Collisions at the Tevatron ANDREW KOBACH, Northwestern University — The Standard Model describes the electroweak interaction by the non-abelian gauge group $SU(2) \otimes U(1)$, and under symmetry transformations, the electroweak gauge bosons (Z , W^\pm , γ) can self-interact, however in the Standard Model, a $Z(\gamma)$ coupling is not permitted. Using data collected since July 2006, $Z(\gamma) \rightarrow \mu\mu\gamma$ events were studied using the Run IIb DØ detector at the Tevatron. Topologically permitted Standard Model $\mu\mu\gamma$ events include initial radiation of a photon by a quark and a subsequent decay of a Z to two muons, or where one of the leptons from the Z radiates a hard photon. If the measured cross-section of $Z(\gamma) \rightarrow \mu\mu\gamma$ is significantly different compared to the theoretical prediction, this is strong evidence for new physics associated with $Z(\gamma)$ coupling. Using the largest dataset to date for such a measurement, this work in progress will culminate in an observation in new physics or will set the tightest limits on anomalous gauge couplings in the world.

Cecilia E. Gerber
University of Illinois at Chicago

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