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Top quark pairs in association with a photon and the top quark electric charge

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I would like to present results for hadronic top quark pair production in association with a photon at next-to-leading order accuracy. This process allows a direct measurement of the top quark electromagnetic couplings that, at the moment, are only loosely constrained. Top quark decays are treated in the narrow width approximation and spin correlations of all final state particles are accounted for. We include photon radiation off top quark decay products which yields a significant contribution to the cross section. At the Tevatron, the Standard Model production rate is relatively small. However, thanks to the large data sample, the CDF collaboration started looking for anomalous effects in this rare process. I will present results at next-to-leading order accuracy that match the CDF selection cuts. I will also discuss results for the LHC where hundreds of high energetic photons events will be observed within the next two years. In particular, a direct and more precise measurement of the top quark electric charge seems possible.

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