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Top Quark Pair Production in Association with a Jet with NLO QCD Off-Shell Effects at the LHC

We present a complete description of top quark pair production in association with a jet in the dilepton channel at NLO QCD. Our calculation includes all non-resonant diagrams, interferences, and off-shell effects of the top quark and as well non-resonant and off-shell contriubutions due to the finite W gauge boson width. This calculation constitutes the first fully realistic NLO computation for top quark pair production with a final state jet in hadronic collisions. We also present numerical results for the total cross section and differential distributions for the LHC at 8 TeV.

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