Contribution ID: **93** Type: **Poster Presentation**

A study of top quark pair production in association with a high energy photon at the LHC.

We provide a study of the ratio of the top quark pair in association with a photon to the top quark pair to improve the precision of NLO QCD predictions for the proton proton $\rightarrow t\bar{t}$ process in the dilepton top quark decay channel. The top quark pair production cross-section has been measured at LO and NLO in proton-proton collisions at $\sqrt{s}$ = 13 TeV. The events with exactly one electron and one muon, at least two jets, one of which is a b-tagged, are selected. Monte Carlo simulations at leading-order and next-to-leading-order theoretical calculations are used to link many observables. Photon kinematic variables, the angular separation between the two leptons, and angular variables associated with the photon and the leptons are among the variables. This channel is selected because it provides a clean signal while limiting all the background contamination.

Apply to be considered for a student ; award (Yes / No)?

Yes

Level for award;(Hons, MSc, PhD, N/A)?

PhD

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Session Classification: Poster Session

Track Classification: Track B - Nuclear, Particle and Radiation Physics