

# Measurement of $t\bar{t}\gamma$ differential cross sections and EFT interpretation using full Run 2 data with the ATLAS experiment

*Tuesday 12 December 2023 14:00 (20 minutes)*

The production of top quark pairs in association with a photon ( $t\bar{t}\gamma$ ) is an important process to investigate the coupling between photon and top quark. Precise measurements of this coupling allow to test the Standard Model (SM) and probe for new physics effects. The use of Standard Model Effective Field Theory (SMEFT) models new physics phenomena beyond the SM via the introduction of higher dimension operators. In this talk, the measurement of the differential  $t\bar{t}\gamma$  cross-section using  $140\text{ fb}^{-1}$  of data collected by the ATLAS detector in proton-proton collisions at  $\sqrt{s} = 13\text{ TeV}$  and its interpretation in the context of SMEFT will be presented. The measurement is performed in the single lepton and dilepton decay channel of the top quarks at particle level. The differential cross section as a function of photon transverse momentum is used to set constraints on the electroweak dipole moments of the top quark.

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