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Measurement of differential cross-sections of the $t\bar{t}\gamma$ production in semileptonic and dileptonic channel in proton-proton collisions at $\sqrt{s} = 13$ TeV with ATLAS detector

Tuesday 29 November 2022 15:00 (20 minutes)

The top quark being the heaviest fundamental particle in the Standard Model (SM) plays a very important role in the study of fundamental interactions. It has a very short lifetime and it decays before it hadronizes, passing its properties to its decay products. Top quark pair production in association with a photon ($t\bar{t}\gamma$) is a very important process for measuring the coupling between top quark and photon. A precise measurement of this coupling is necessary for testing the SM and also for probing any new physics effect at very high energy scale. Deviations from the SM coupling can be a limit of new physics phenomena that can be interpreted in the context of effective field theory approaches.

In this talk, measurement of $t\bar{t}\gamma$ differential cross-section using 139 fb^{-1} of data collected by the ATLAS detector in proton-proton collisions at $\sqrt{s} = 13$ TeV will be presented. This measurement is done in the semileptonic and dileptonic decay channel of the $t\bar{t}$ pair.

Primary author: MONDAL, Buddhadeb (University of Siegen)

Presenter: MONDAL, Buddhadeb (University of Siegen)

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