



Contribution ID: 314

Type: **Parallel Session talk**

Direct top-quark decay width measurement at $\sqrt{s}=13$ TeV with the ATLAS experiment

Tuesday, 6 August 2019 16:30 (12 minutes)

Summary

Precise measurements of the properties of the top quark test the Standard Model (SM) and can be used to constrain new physics models. ATLAS collaboration performed a direct measurement of the decay width of the top quark using $t\bar{t}$ events in the lepton+jets and dilepton final states. The data sample was collected by the ATLAS detector at the LHC in proton-proton collisions at a centre-of-mass energy of 13 TeV and corresponds to an integrated luminosity of 140 fb⁻¹. A multivariate technique is employed in the lepton+jets channel to resolve the ambiguity of the jet-to-parton assignment. The decay width of the top quark is extracted from the data using a profile likelihood method using the distributions of variables sensitive to the top-quark decay width in $t\bar{t}$ pair production.

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Session Classification: Collider SM & BSM (Parallel)