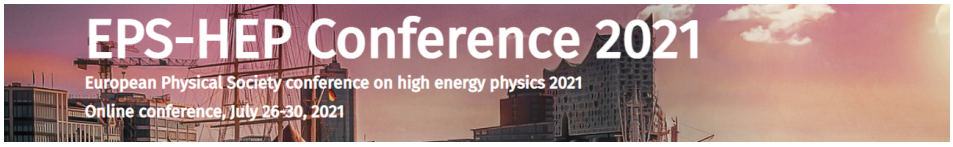

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Search for tttt production in 13 TeV proton-proton collission with the ATLAS detector at the LHC

The methodology and results are presented for the search for four-top production at the ATLAS detector. An integrated luminosity of 139 fb-1 of proton-proton collision data at sqrt(s) = 13 TeV was analyzed to measure the cross section of the four-top production, specifically for decays containing 1 lepton or 2 oppositely-charged leptons. For these largely hadronic decay channels, signal regions were defined by high jet and b-tagged jet multiplicity.
Within these regions, a multivariate discriminant provided further isolation of the four-top-quark signal from backgrounds, in particular the dominant background resulting production of top-quark pair plus jets. A reweighting technique was applied to ensure that the backgrounds were accurately modelled to avoid biasing the multivariate discriminant in regions of high jet multiplicity.The analysis measured a cross section value of 26 (+17/-15) fb, or an observed (expected) discrepancy of 1.9 (1.0) standard deviations from the background-only hypothesis.

Collaboration / Activity

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