



Contribution ID: 583

Type: Poster

Measurement of the top quark pole mass using $t\bar{t}$ +jet events in the dilepton final state at 13 TeV with CMS

A measurement of the top quark pole mass in events where a top quark-antiquark pair ($t\bar{t}$) is produced in association with at least one additional jet ($t\bar{t}$ +jet) is presented. This analysis is performed using proton-proton collision data at 13 TeV collected by the CMS experiment at the CERN LHC, corresponding to a total integrated luminosity of 36.3 fb^{-1} . Events with two opposite-sign leptons in the final state ($e\bar{e}$, $\mu\bar{\mu}$, $e\mu$) are analyzed. The reconstruction of the main observable and the event classification are optimized using multivariate analysis techniques based on machine learning. The production cross section is measured as a function of the inverse of the invariant mass of the $t\bar{t}$ +jet system at the parton level using a maximum likelihood unfolding. Given a reference parton distribution function (PDF), the top quark pole mass is extracted using the theoretical predictions at next-to-leading order. For the ABMP16NLO PDF, this results in $m_t^{\text{pole}} = 172.94 \pm 1.37 \text{ GeV}$.

Collaboration / Activity

CMS

Primary author: WUCHTERL, Sebastian (CERN)**Presenter:** WUCHTERL, Sebastian (CERN)**Session Classification:** Poster session**Track Classification:** Top and Electroweak Physics