

Contribution ID: 739

Type: Poster

Top quark charge asymmetry in ttbar+jets events

Top quark charge asymmetry measurements in jet-associated top quark pair production are performed in proton-proton collisions at a centre-of-mass energy of 13 TeV, using a sample of events containing one electron or muon in the final state. The data were recorded with the CMS detector at the CERN LHC and correspond to an integrated luminosity of 138 fb⁻¹. Two observables that exploit the relation between the momenta of the top quarks and the jet in the final state are measured: the energy asymmetry and, for the first time, the incline asymmetry. The analysis incorporates top quark signatures across different kinematic regimes: at low transverse momentum, where decay products appear as distinct jets and isolated leptons, and at transverse momentum, where they become collimated and overlap. The sensitivity to charge asymmetry effects is enhanced by performing the measurements in a fiducial region defined by the scattering angle of the associated jet, ranging from 0.25π to 0.6π . The measurements are corrected for detector effects to the particle level using a maximum-likelihood unfolding. The energy asymmetry deviates from zero by more than 3 standard deviations, while the incline asymmetry exhibits a deviation of 1 standard deviation. The measured asymmetries are consistent with standard model predictions calculated at next-to-leading order in quantum chromodynamics, offering new insights into top quark dynamics in jet-associated processes.

Secondary track

Author: AN, Ying (DESY) Session Classification: Poster T06

Track Classification: T06 - Top and Electroweak Physics