

Measurement of the top quark antiquark pair charge asymmetry in events with highly boosted top quarks in proton-proton collisions at 13 TeV with the CMS detector.

Tuesday, 27 June 2023 14:45 (15 minutes)

The top quark is the heaviest elementary particle, making it a unique tool to search for new physics. In this talk, I will present a new measurement of the top quark pair charge asymmetry for highly boosted top quarks decaying to a single lepton, missing transverse momentum and jets. The analysis is performed on 13TeV proton-proton collision data recorded by the CMS experiment during Run 2. We have defined a dedicated phase space that selects top quark-antiquark pairs with invariant mass greater than 750GeV in a semileptonic final state where the lepton is not necessarily isolated. This highly boosted sample is enhanced in valence quark production and thus expected to be more sensitive to deviations in the charge asymmetry caused by BSM processes. Dedicated tagging techniques are used to identify the decay products of hadronic top quarks and W bosons. An unfolding procedure is used to correct for detector resolution and acceptance, and inefficiencies in the event reconstruction. The result is presented in the full phase space at parton level and can be used as input to global EFT interpretations. In my talk, I will also share our preliminary work on EFT interpretation.

Primary author: OZEK, Beren

Presenter: OZEK, Beren

Session Classification: CMS/Theory