



Calorimetry: Validation and Performance of PandoraPFA

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Electrons and Bremsstrahlung

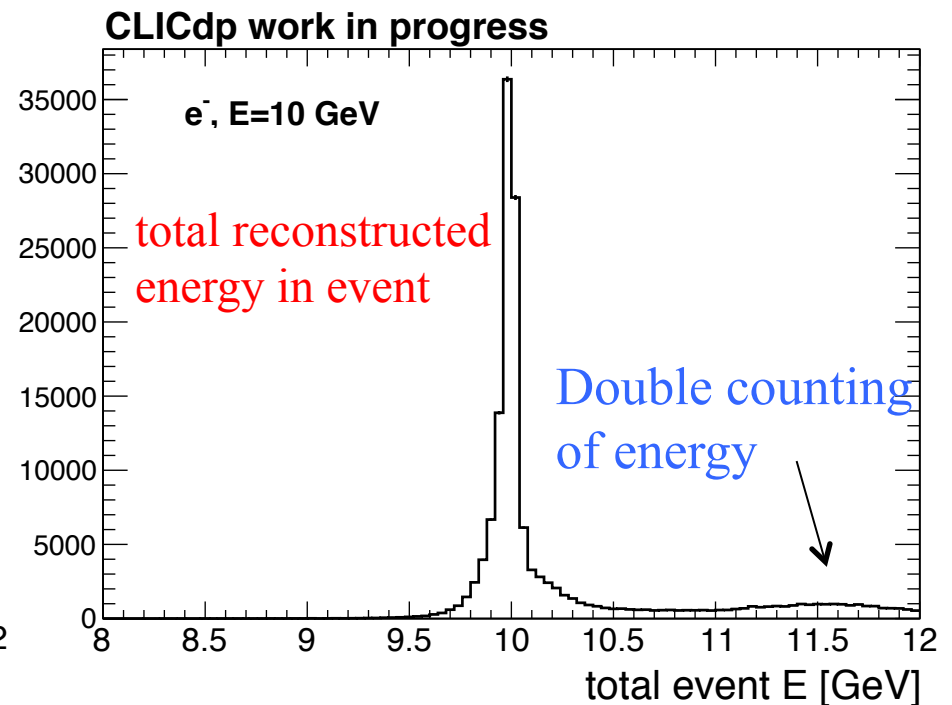
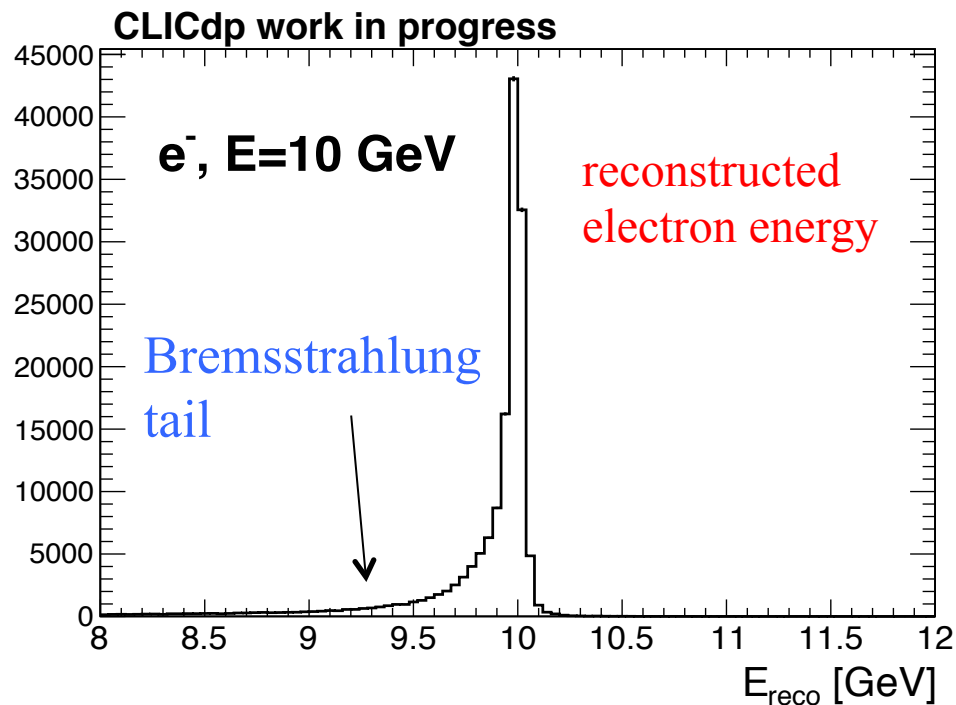


Electron energy resolution impacted by photon bremsstrahlung

→ Track fit also distorted

→ adding all photons up leads to a partial double counting as well

→ At 10 GeV Identification efficiency around 90 % in barrel, in endcap down to 75-80 %, for higher energies identification efficiency above 95 % both in barrel and endcap

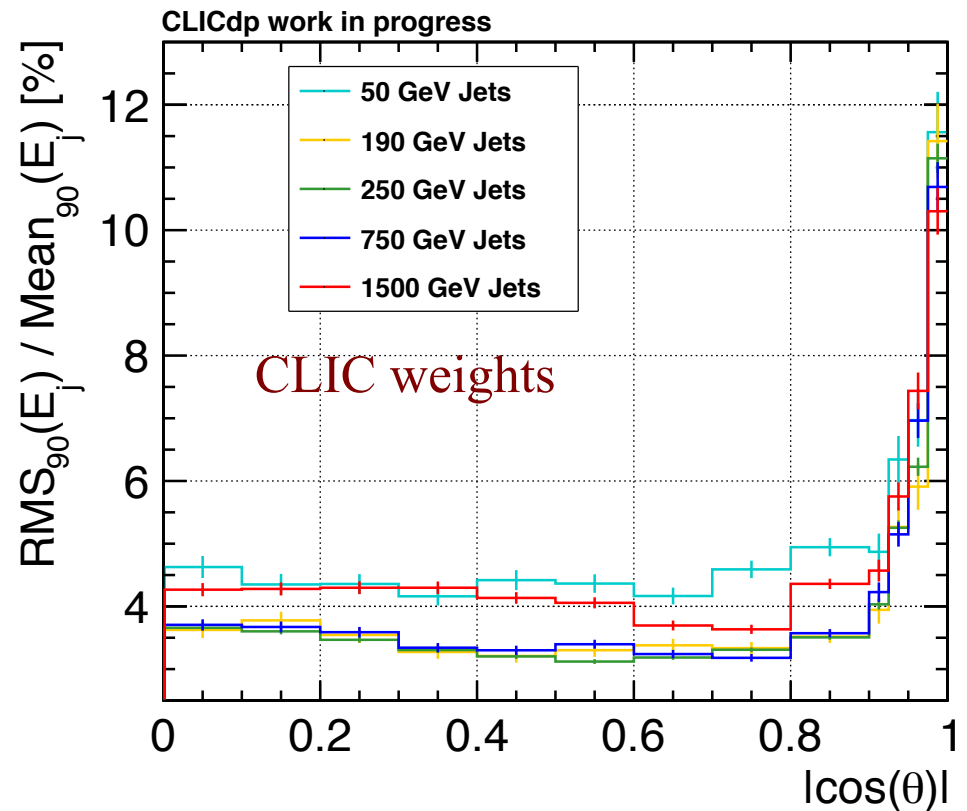
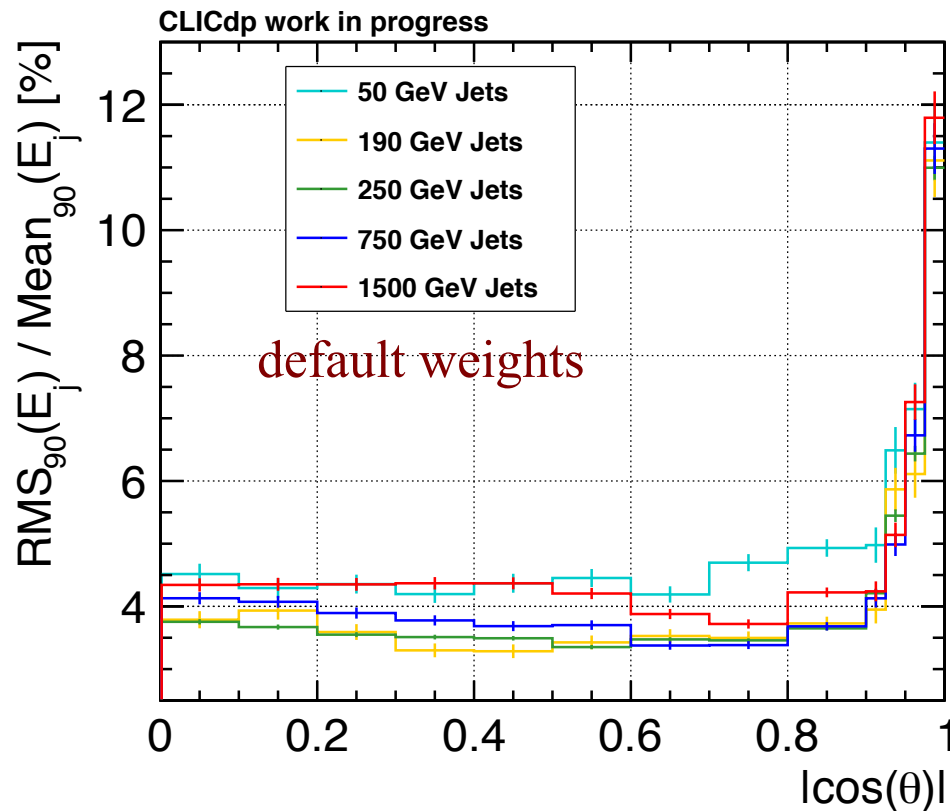


➡ Work ongoing for photon bremsstrahlung recovery algorithm to recover electron response tail and avoid double counting of energy from bremsstrahlung photons

Jet energy resolution at CLIC: zoomed out



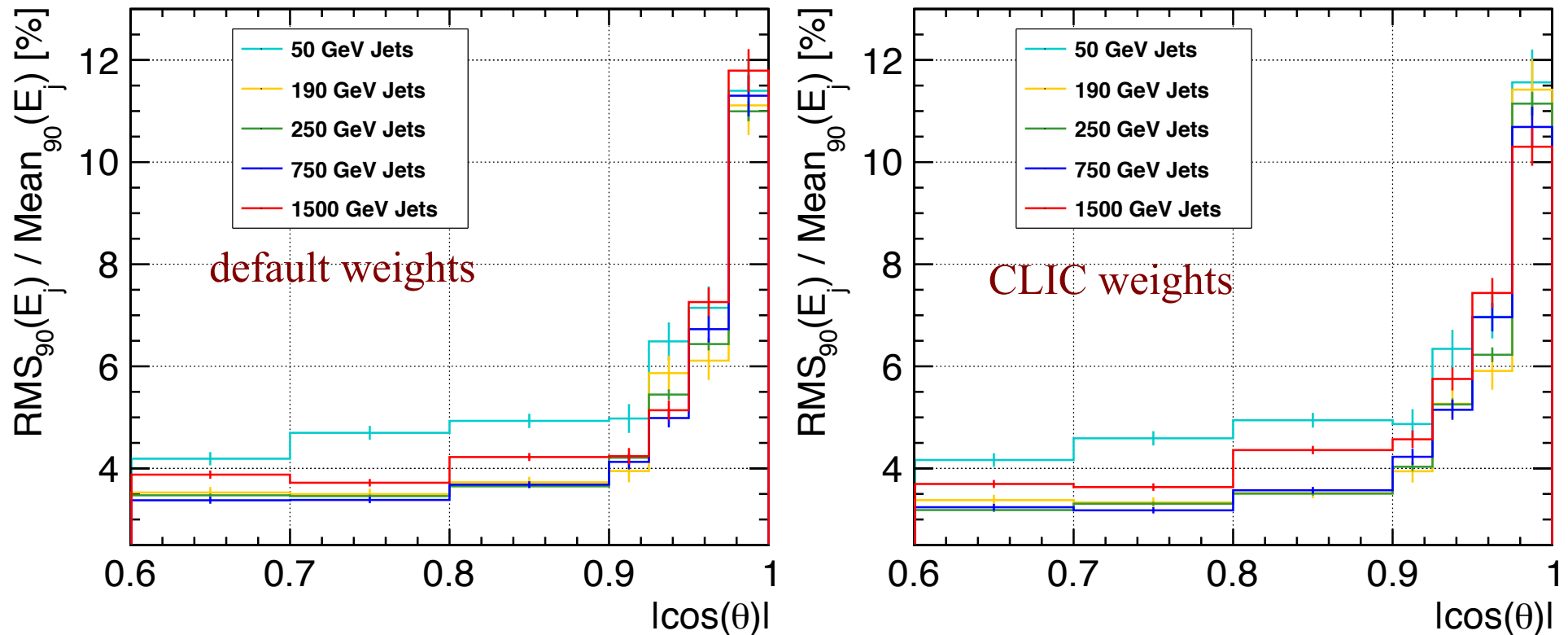
in forward region jet energy values up to 11.5 %, uncertainties of RMS values larger due to less statistics



Jet energy resolution at CLIC: forward jets



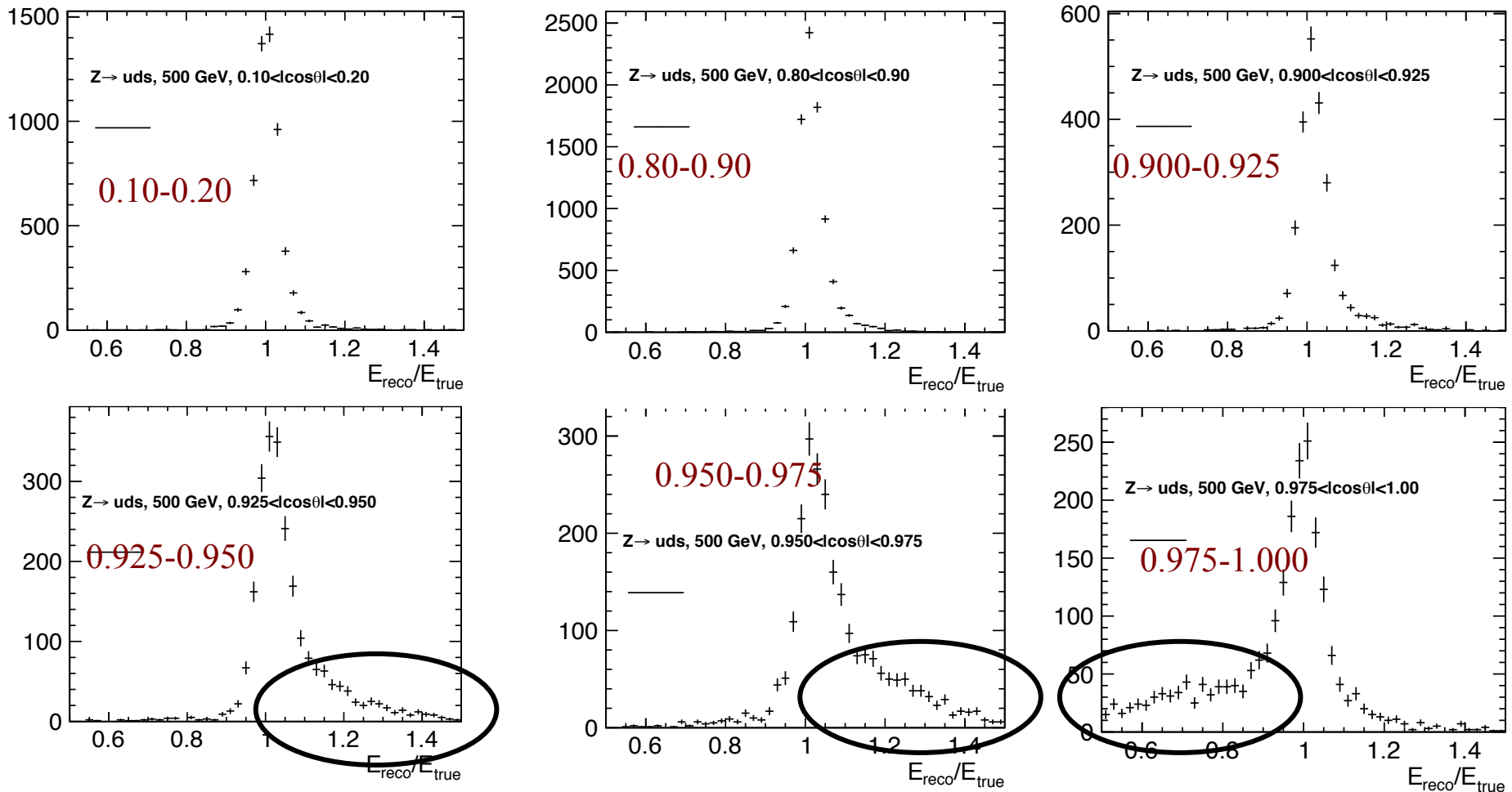
Endcap resolutions a bit worse than resolutions in outer barrel bins, large increase starting from bin at $|\cos \theta| > 0.925$ ($18.2\text{-}22^\circ$), a lot worse for jets with $|\cos \theta| > 0.975$ (12°)



Energy Resolution: $Z \rightarrow uds$ at 500 GeV



Check energy resolution for 500 GeV dataset in different $\cos \theta$ bins

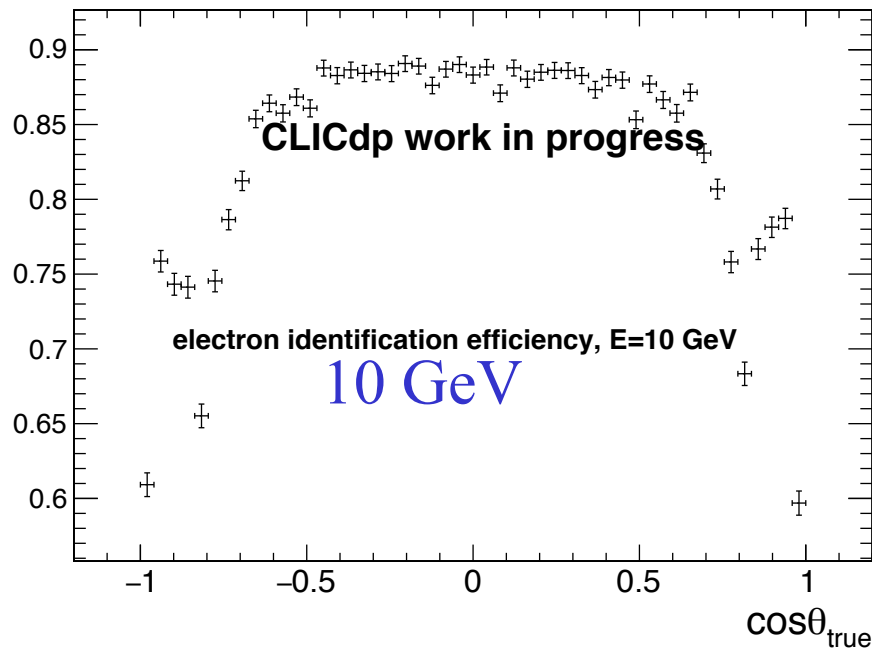


Resolution core not drastically different in forward region (compared to endcap), but long tails

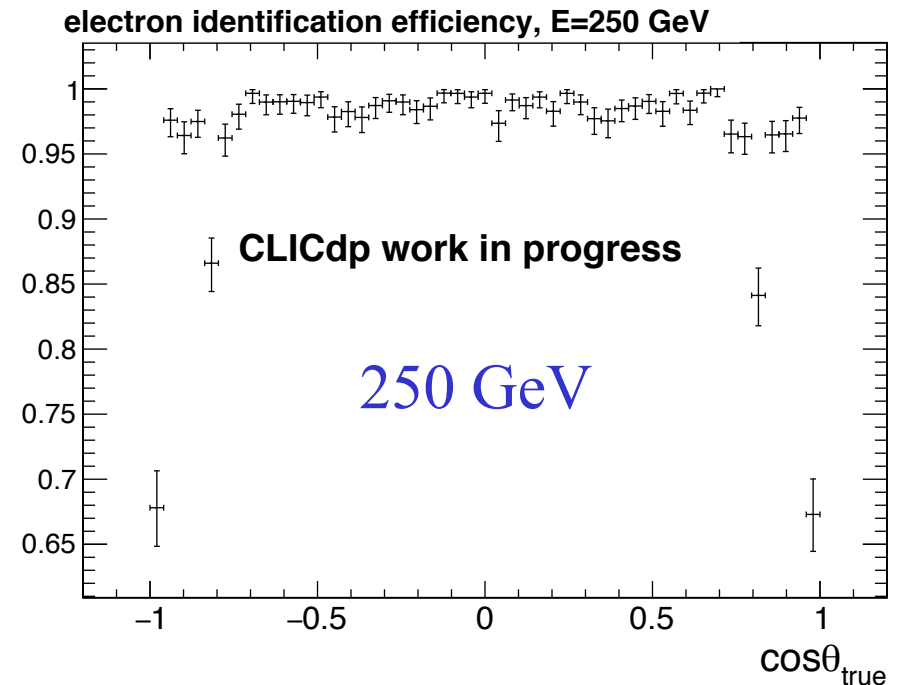
Electron Identification Efficiency



PandoraPFA not designed to perform perfect isolated electron ID, but to find electrons within jets \rightarrow affected by bremsstrahlung at lower energies



Close to 90 % in inner barrel, drop to 75-80 % in endcap

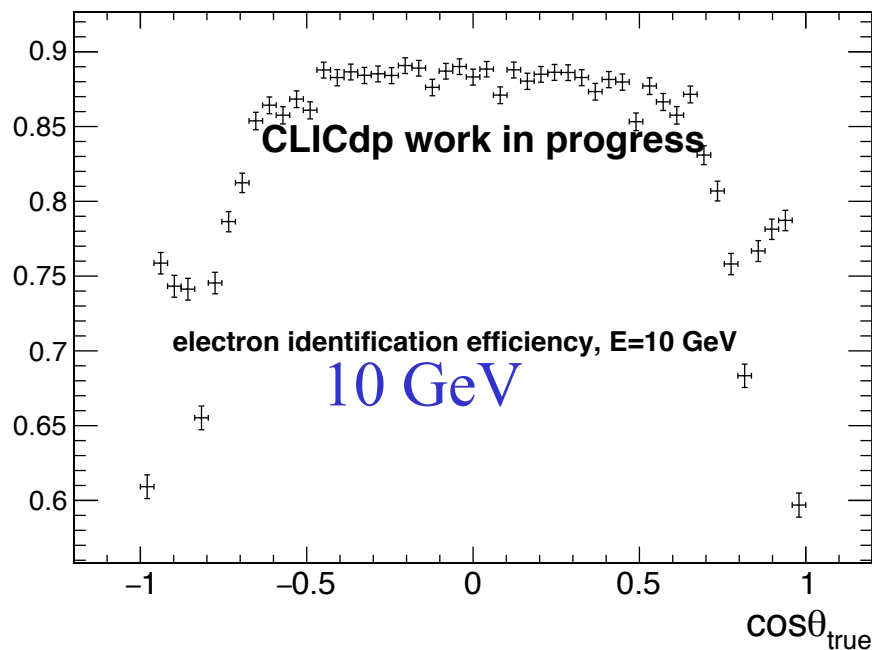


Above 95 % almost everywhere

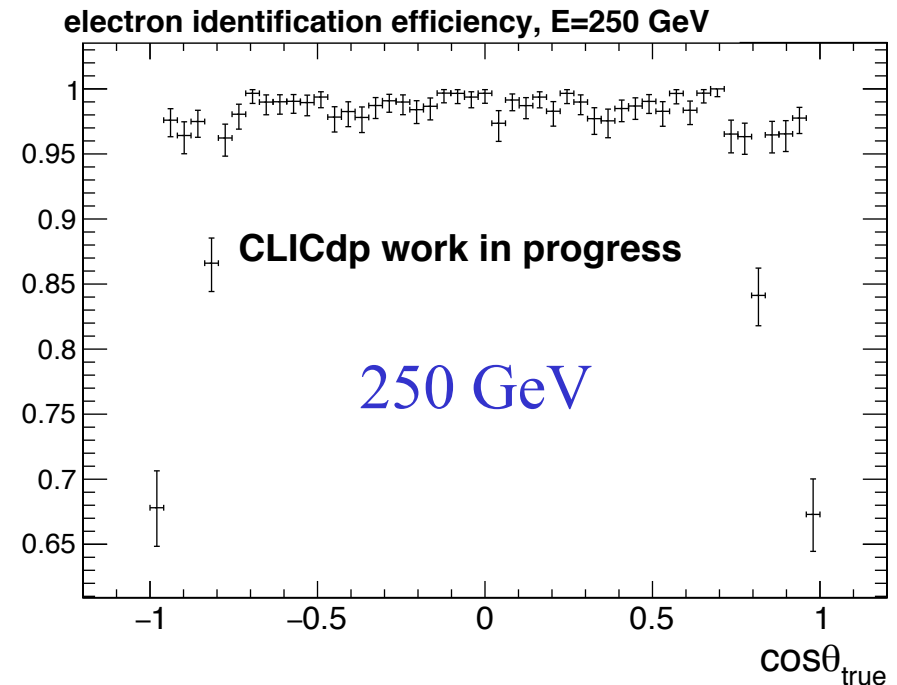
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