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Performance of Track and Vertex Reconstruction and B-Tagging Studies with CMS in pp Collisions at $\sqrt{s}$ = 7 TeV

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First 7 TeV proton-proton collisions produced by the Large Hadron Collider at CERN have been recorded by the CMS experiment in 2010. The ability to accurately and efficiently reconstruct the trajectories of charged particles produced in these collisions is a critical component for most measurements at the LHC. We present several methods for determining the efficiency and measuring the resolution and the momentum scale of track reconstruction in CMS using the first data collected by the detector. The trajectories of charged particles are the key elements for the reconstruction of the primary interaction vertex and for the identification of jets containing the products of a B-hadron weak decay. The distributions of the key observables, such as track impact parameters and vertex properties, are compared with the prediction of Monte Carlo simulation. Finally the performance of vertex reconstruction and B identification algorithms as directly derived from data are shown.

Primary author: CMS COLLABORATION

Presenter: MANGANO, Boris (UCSD)

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