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The performance of missing transverse momentum reconstruction and its significance with the ATLAS detector using 140 fb-1 of sqrt(s)=13 TeV pp collisions

This poster presents the reconstruction of missing transverse momentum (MET) in proton-proton collisions, at a center-of-mass energy of 13 TeV. This is a challenging task involving many detector inputs, combining fully calibrated electrons, muons, photons, hadronically decaying tau-leptons, hadronic jets, and soft activity from remaining tracks. Possible double counting of momentum is avoided by applying a signal ambiguity resolution procedure which rejects detector inputs that have already been used. Several MET working points are defined with varying stringency of selections, the tightest improving the resolution at high pile-up by up to 30% compared to the loosest. The MET performance is evaluated using data and Monte Carlo simulation, with an emphasis on understanding the impact of pile-up, primarily using events consistent with leptonic tau decays. The studies use 140 fb-1 of data collected by the ATLAS experiment at the Large Hadron Collider between 2015 and 2018. The results demonstrate that MET reconstruction, and its associated significance and resolution, are well-understood and reliably modelled by simulation.

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