

Identification of very-low transverse momentum muons with the ATLAS experiment

Friday, July 6, 2018 8:15 PM (15 minutes)

The standard muon identification of the ATLAS experiment is optimized for muons with transverse momentum (p_T) above 5 GeV. However searches for low mass resonances and many B-physics measurements often need to identify muons with lower p_T , where standard algorithms suffers from large backgrounds originating from sources such as hadrons decay in flight. A new “LowPt” identification has been developed to allow optimal muon identification down to 2-3 GeV in p_T using variables that are sensitive to track kinks in the inner detector and to the imbalance of the momentum measured in the inner detector and in the muon spectrometer. The new “LowPt” identification, analysed in simulation and in data, shows good efficiencies for muons produced in hard collisions and is effective in rejecting backgrounds.

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Session Classification: POSTER

Track Classification: Computing and Data Handling