

Abstract Submitted
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Simulations of Lepton-Hadron Discrimination in pp Collisions at Forward Rapidity with the STAR Detector at RHIC

B.S. PAGE, Indiana University, STAR COLLABORATION — In the coming years STAR will be measuring flavor separated polarized anti-quark distribution functions by studying the reaction $q + \bar{q} \Rightarrow W^{+(-)} \Rightarrow e^{+(-)}$ in polarized pp collisions at $\sqrt{s} = 500$ GeV. Detection of high p_T charged leptons with the Endcap Electromagnetic Calorimeter (EEMC) in the presence of a large hadronic background presents a significant challenge. To develop a hadron background rejection algorithm, we produced a series of Pythia simulations of W signal and QCD background events using GEANT and the full detector model. Pre-selection of those Pythia events likely to pass our triggers allowed for the generation of a background sample with an integrated luminosity comparable to that of the expected data. The rejection algorithm itself is based on three principles: isolation conditions on energy and tracks around the candidate electron, vetoes on energy and tracks opposite in azimuth from the candidate electron, and the properties of longitudinal and transverse shower development in the EEMC. This talk will detail the rejection algorithm which achieves a signal to background ratio of greater than one to one over a large fraction of the detected lepton energy spectrum.

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