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D^0 Reconstruction in b-jets for Events with $Z^0 \to \mu^+\mu^-$ + b-jet JESSICA METCALFE, I. GORELOV, S. SEIDEL, K. TOMS, University of New Mexico, ATLAS COLLABORATION — A Monte Carlo study on b-jet heavy quark fragmentation in ATLAS using fully reconstructed hadronic D mesons is presented. Events with a $Z^0 \to \mu^+\mu^-$ and a b-jet where $b \to D + X$ were studied. Several charmed hadronic modes were reconstructed. Presented here are the decay channels $D^0 \to K^-\pi^+$ and $\mathrm{D}^{*+} \to D^0\pi^+, D^0 \to K^-\pi^+$. The mass resolution of the D^0 and D^{*+} is reported as well as the yield and reconstruction efficiencies for each species and the shape of the b-jet in terms of the p_{T} distribution of the D meson with respect to the jet axis. When these measurements are repeated with and compared to real LHC data, they will provide important information on the b-quark parton distribution inside the proton, and on the b-quark fragmentation distribution. Moreover, the analysis, when applied to real data, will give a better understanding of QCD backgrounds and provide an additional tool to constrain the b-jet energy scale.

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