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Measuring the b-jet tagging efficiency on c-jets containing D^* mesons with ATLAS data

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The identification of jets originating from b-quarks (b-tagging) is a crucial tool for the LHC physics program, both for precision measurements and in searches for new particles. One important ingredient when using b-tagging in physics analyses is the determination of the probability to mistakenly b-tag a jet originating from a c-quark (c-tag efficiency). The optimal sample for the measurement of the c-tag efficiency would be a clean sample of jets originating from c-quarks. The sample of jets associated to reconstructed D^* mesons (through the decay chain $D^* \rightarrow D^0(K\pi\pi)$) is quite close to this ideal case since most D^* mesons originate from c-quark hadronization. The c-tag efficiency has been measured by comparing the reduction in the yield of D^* mesons before and after the b-tagging requirement of the associated jet. The contamination from D^* mesons that originate from b-hadron decays has been taken into account using a fit to the D^0 pseudo-proper time distribution.

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