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b-tagging calibration using top pair events with the ATLAS experiment

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Many physics analyses with the ATLAS detector expect to have jets originating from b-quarks. Algorithms that allow to identify those jets are thus of great importance and it is crucial to understand their performance. In the final state of top quark pairs decays at least two b-jets are present. This b-enriched sample provides a perfect environment for calibration of b-tagging algorithms for analyses with large multiplicity of high p_T jets, for example Higgs or SUSY searches. This approach takes advantage of the large cross-section of the top quark pair production at the LHC and a good understanding of this process after the initial phase of data taking with the ATLAS detector. To measure the b-tagging efficiency in the single lepton channel a slightly modified tag and probe method is applied to top quark pairs events selected from data. Alternatively, in both single lepton and dilepton channels, b-tagged jets in an event can be counted. This method provides as well a top quark pairs production cross-section estimation.

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