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Optimising the top-quark reconstruction for the W' search in the hadronic channel.

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The search for $W' \rightarrow tb$ decays in the hadronic final states using the full run 2 data, which was collected by the ATLAS detector at the Large Hadron Collider (LHC), is on going. This search relies on the optimal identification of large radius jets that emanates from the top-quark, hence a study to find a method that optimizes the top-quark reconstruction has been done. To conduct this study, five signal samples with different W' masses were studied. This provides an opportunity to explore different methods that yields the highest efficiency of choosing a top-quark jet. The transverse momentum and the invariant mass of the large radius, and small radius jets contained within the large radius jet were studied. The current method that is used to choose the top-quark candidate has the efficiency of 82%, this study attempts to make improve this efficiency.

Apply to be considered for a student award (Yes / No)?

Yes

Level for award (Hons, MSc, PhD, N/A)?

MSc

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