



Identification of boosted hadronically decaying W bosons and top quarks using the ATLAS detector

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At the LHC, massive hadronically decaying Standard Model particles, such as the W boson and the top quark, can be produced with high transverse momenta much larger than their mass. This will lead to increased collimation of the decay products in the direction of the boosted parent particle. ATLAS has commissioned and implemented jet substructure techniques to reconstruct and identify hadronically decaying W bosons and top quarks while rejecting backgrounds from light quarks and gluons. In Run1, the performance of these techniques, evaluated from Monte Carlo simulation, was validated with data. For Run2, these techniques are further optimised and their expected performance are studied. Several physics analyses with hadronically decaying W boson and top quark final states have employed these techniques to increase the sensitivity of their analyses.

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