

VariableR Reclustering for Multiple Boosted Top Quark and W Boson Events
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Abstract

VariableR jet reclustering is an innovative technique that allows for the reconstruction of boosted object over a wide range of kinematic regimes. Such capability enables the efficient identification of events with multiple boosted top quarks which is a typical signature for new physics processes such as the production of the supersymmetric partner of the gluon. In order to evaluate the performance of the algorithm, the VariableR reclustered jets are compared with fixed radius reclustered jets. The flexibility of the algorithm is tested by reconstructing both boosted top quarks and boosted W bosons. The VariableR reclustering method is found to be more efficient than the fixed radius algorithm at identifying top quarks and W bosons in events with four top quarks, therefore enhancing the sensitivity for gluino searches.