

# Main Points

Up to now, the primary method of identifying certain decays involved searching for substructures within reconstructed jets

We present a method that would ideally allow optimized identification hadronically decaying  $t$  quarks,  $H$  bosons, and  $W$  and  $Z$  bosons, discriminating against jets from light quarks and gluons.

Given a list of jet attributes, we Lorentz-boost them into hypothetical reference frames corresponding to our heavy particle

Within each reference frame we then calculate event shape parameters and momentum balance estimators. We call these quantities “boosted event shapes” (BES).

With a large number of BES parameters characterizing each jet, we turn to multivariate analysis technique such as artificial neural networks to classify the jet sources.

We then demonstrate how this technique can potentially achieve a high degree of accurate classification.