Jet Asymmetries in the ATLAS Level 1 Calorimeter Trigger\textsuperscript{1} JOHAN BONILLA, Univ of Oregon, LIESE MARNARD, Univ of Oregon/Reed College, STEPHANIE MAJEWSKI, Univ of Oregon, ATLAS COLLABORATION — Boosted objects are reconstructed particle decay products with transverse momenta that are considerably greater than their respective rest masses. Such objects are interesting for new physics searches using the ATLAS detector at the Large Hadron Collider (LHC). We create and study algorithms used to better discern boosted objects in the Phase-I upgrade of the Level-I trigger electronics in ATLAS. In particular, we present an algorithm which exploits the asymmetries in the kinematics of jets arising from boosted top quarks compared to jets arising from gluons, using 0.2x0.2 towers (in $\eta$-$\phi$) of the global feature extractor (gFEX), a component of the Level-1 calorimeter trigger system for the Phase-I upgrade. The algorithm, whose parameters are optimized for signal efficiency and background rejection, has the potential to be used in field programmable gate arrays (FPGAs); thus simplicity, speed, and stability are emphasized.

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