

DeXTer: Deep Sets based Neural Networks for Low-pT X- $\rightarrow$ bb $\bar{\bar{b}}$ Identification in ATLAS

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Several flavor tagging algorithms exist in ATLAS for jets containing two b-hadrons. These double-b tagger algorithms focus on high transverse-momentum jets, usually above 200 GeV. This work describes the development of a new double-b tagger for jets below 200 GeV. The algorithm relies on large radius track-jets which can be reconstructed at low transverse momenta and implements a neural network architecture based on Deep Sets that uses displaced tracks, secondary vertices, and substructure information to identify the presence of multiple b -hadrons. A measurement of the efficiency of the algorithm is performed in $t\bar{t}$ and $Z +$ jets events using the collision data from the Large Hadron Collider at $\sqrt{s} = 13$ TeV center-of-mass energy recorded with the ATLAS detector between 2015 and 2018, corresponding to an integrated luminosity of 139 fb^{-1} .

Author: ATLAS COLLABORATION

Presenter: CHOU, Yuan-Tang (University of Massachusetts (US))

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