

Abstract Submitted
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Using Boosted Decision Trees to Search for Long-lived Particles Decaying in the ATLAS Muon Spectrometer.¹ NATHAN HERLING, University of Arizona, ATLAS COLLABORATION TEAM — Long-lived particles (LLP's) are predicted to be produced at the Large Hadron Collider by several Beyond the Standard Model theories. A search for events with one displaced vertex in the Muon Spectrometer from a long-lived particle is underway using data collected by the ATLAS detector at the LHC. Details of this search are presented including the use of boosted decision trees to separate signal from background events. The K-fold algorithm is used as a benchmark machine learning model. Optimization of the K-fold algorithm is accomplished using hyperparameter grid searches. Results on the accuracy of the K-fold algorithm in classifying signal and background events are presented.

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