

# Searches for new phenomena using Anomaly Detection at the ATLAS experiment

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After the discovery of the Higgs boson at the Large Hadron Collider (LHC) at CERN, we undoubtedly live in a phase characterized by a lack of discoveries of Beyond Standard Model physics in particles accelerators. Anomaly Detection is a novel machine learning approach that could be used to resolve this stalemate, as it allows to be very general with the searched signatures without losing sensibility to possible signals. ATLAS analyses are taking the first steps in this direction, following the results obtained from CWoLa based resonant searches. The poster shows the results obtained with Anomaly Detections approaches in ATLAS, where events are selected solely because of their incompatibility with a learned background-only model. In particular, my focus is on the search for a heavy resonance  $Y$  decaying into a Standard Model Higgs boson  $H$  and a new particle  $X$  in a fully hadronic final state, which represents the first application of fully unsupervised machine learning to an ATLAS analysis

## I read the instructions above

Yes

## Alternate track

1. Higgs Physics

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