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Type: **Poster Presentation**

Study of systematic uncertainties and spurious signals of resonant $H \rightarrow Z\gamma$ production at ATLAS Experiment

This work examines the assessment of systematic uncertainties and quantification of probable false signals on the fitting signal yield to Higgs-like production in the $Z\gamma$ final state, where the Z boson decays leptonically. Several sources of systematic uncertainties for the measured observables are considered such as detector systematic uncertainties from detector effects and modelling systematic uncertainties due to modelling of signal and the background processes. To estimate the contribution of each source in the overall uncertainty, large-scale Monte Carlo events simulation has been performed where the events correspond to an integrated luminosity of 139 fb^{-1} dataset recorded by the ATLAS experiment in proton-proton collisions during the LHC Run 2. The study implements a machine learning algorithm approach in the form of a deep neural network classifier response function score cut-based analysis as well as an inclusive analysis.

Apply to be considered for a student ; award (Yes / No)?

Yes

Level for award;(Hons, MSc, PhD, N/A)?

PhD

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