Contribution ID: **22** Type: **Lightning talk**

# Electron identification in ATLAS using a deep neural network

*Friday, 13 May 2022 14:50 (5 minutes)*

The currently used identification of electrons in ATLAS uses a likelihood approach without considering correlations between the input variables. In this talk we introduce the next generation identification algorithm using the same input information but with a deep neural network in order to extract more information from the input variables and substantially improve the rejection of fake electrons. In simulated data, the network improves the rejection of background over the current likelihood approach by a factor of up to four while maintaining the same signal efficiency.

Furthermore, instead of using a binary classifier a multiclass classifier is used allowing for more flexibility in rejecting specific backgrounds by giving more weight to the output of the network of that background. This will also allow to have two different identification scores, one accepting and one rejecting electrons with misidentified charge, without the need of an additional algorithm.

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**Session Classification:** Workshop