Contribution submission to the conference SMuK 2021

Identification of photon conversions from Monte-Carlo simulations in ALICE using XGBoost — •Xuan-Xuyen Nguyen — Physikalisches Institut, Heidelberg, Baden Württemberg

ALICE measures photons by reconstructing photon conversions in the detector material. In the standard analysis a photon candidate sample is obtained by applying a sequence of manually set cuts. In order to improve the photon identification, a XGBoost classifier was trained on Monte-Carlo simulated data in this study. The simulated events were obtained by propagating proton-proton collisions generated with PYTHIA and lead-lead collisions generated with HIJING through the detector setup using the GEANT simulation package. The XGBoost models achieve a more constant and an up to 10% higher signal efficiency than the cut-based model at the same purity. A comparison between the XGBoost and the Random Forest models showed that both make similarly good predictions.

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Email:	**X.Nguyen@stud.uni-heidelberg.de**