Abstract Submitted
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Tagging $c\bar{c}$ events via hadronic decay modes of J/ψ at ATLAS[1] SERGI CASTELLS, University of Illinois at Urbana-Champaign, NICOLO DE GROOT, Radboud University — Searches for $c\bar{c}$ from Higgs/Z decays have been done exclusively for the ground J/ψ state for leptonic decay modes while we aim to tag excited $c\bar{c}$ states via hadronic decay modes. The study of $c\bar{c}$ is relevant to Higgs coupling with the charm quark. Excited energy states such as $\psi(2S)$ and $\chi_{c0,c1,c2}$ are of interest as we can follow their decays into $J/\psi\,\gamma$. The production of excited states of $c\bar{c}$ is via the standard Higgs/Z production chain $gg \to H$ which produces $c\bar{c}$ via the $H \to c\bar{c}\,\gamma$ process. The purpose of creating this tagging algorithm is to apply it to ATLAS data. The tagging is done using machine learning. Training data for the machine learning algorithm comes from Monte Carlo simulations of particle decays and simulations of interactions in ATLAS. Other Monte Carlo simulations are being tested to verify the stability of the algorithm. The accuracy for the fully-connected neural network trained on J/ψ, $\psi(2S)$, and quark/gluon background is 93

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