Weekly Report

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Decorrelate W Tagger

Adversarial Method

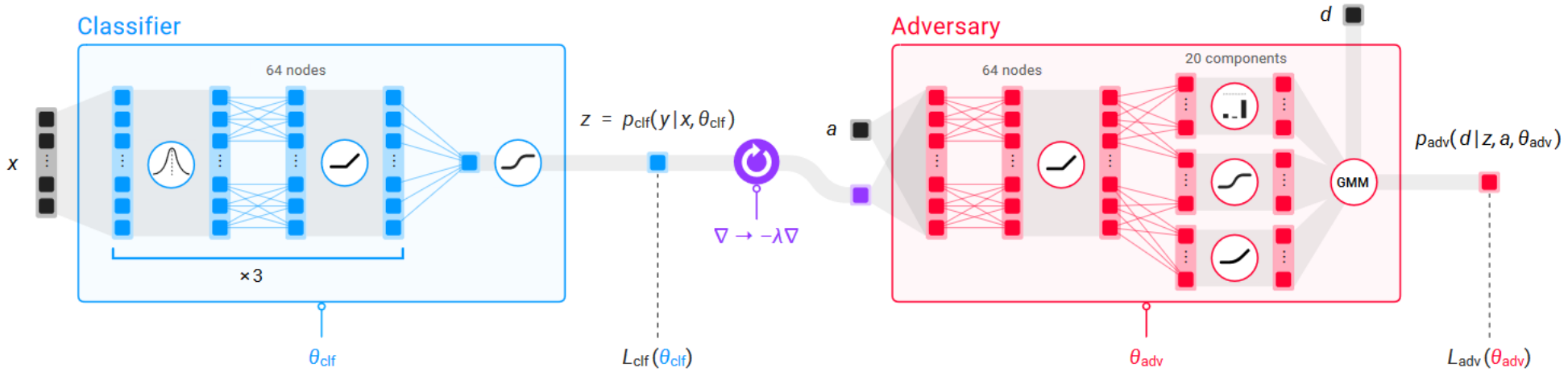

Figure 4: Adversarial neural network architecture. The classifier network is tasked with predicting jet labels (y) based on jet substructure variable inputs (x), outputting a tagger variable (z). The adversary network is tasked with inferring the value(s) of the variables from which the classifier is to be decorrelated (d; here the jet mass m), optionally aided by auxiliary features (a; here $\log p_{\mathrm{T}}$), by parametrising a posterior p.d.f. as a Gaussian mixture model (GMM). The adversarial training is implemented using a gradient reversal layer, the trade-off between L_{clf} and L_{adv} controlled by the parameter λ.

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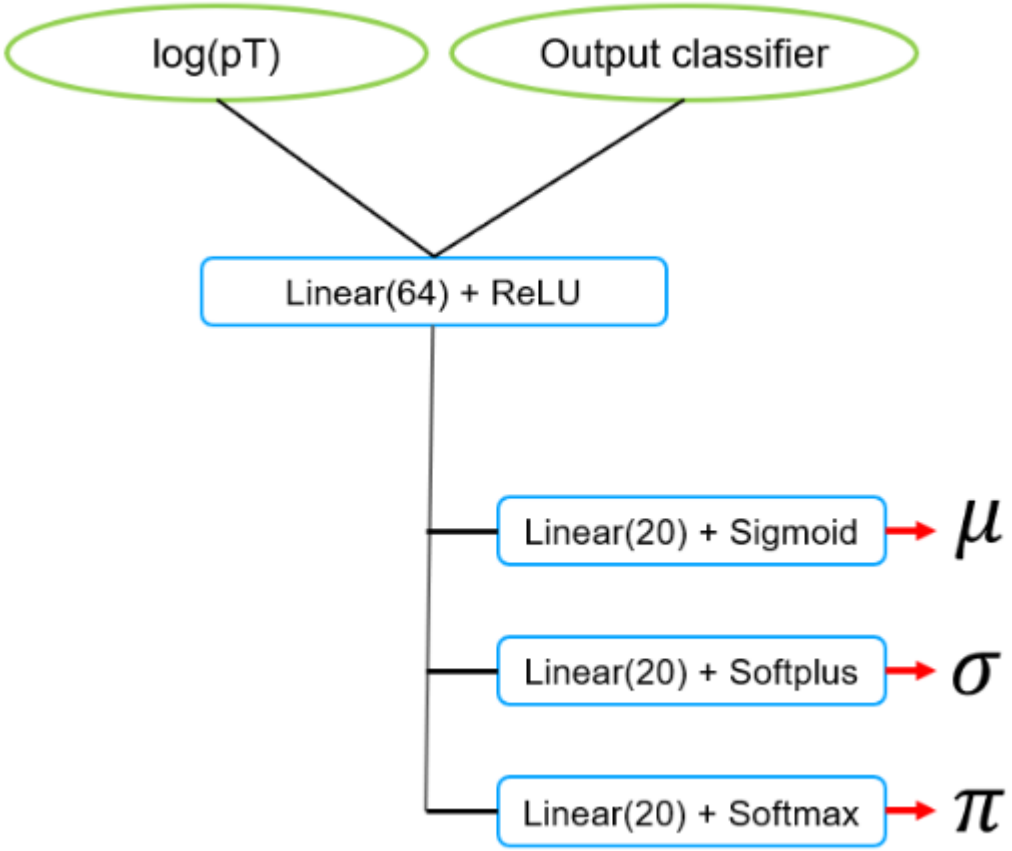
Gaussian Mixing Model



$$\min_{\theta_{\text{clf}}} \max_{\theta_{\text{adv}}} L_{\text{clf}}(\theta_{\text{clf}}) - \lambda L_{\text{adv}}(\theta_{\text{clf}}, \theta_{\text{adv}})$$

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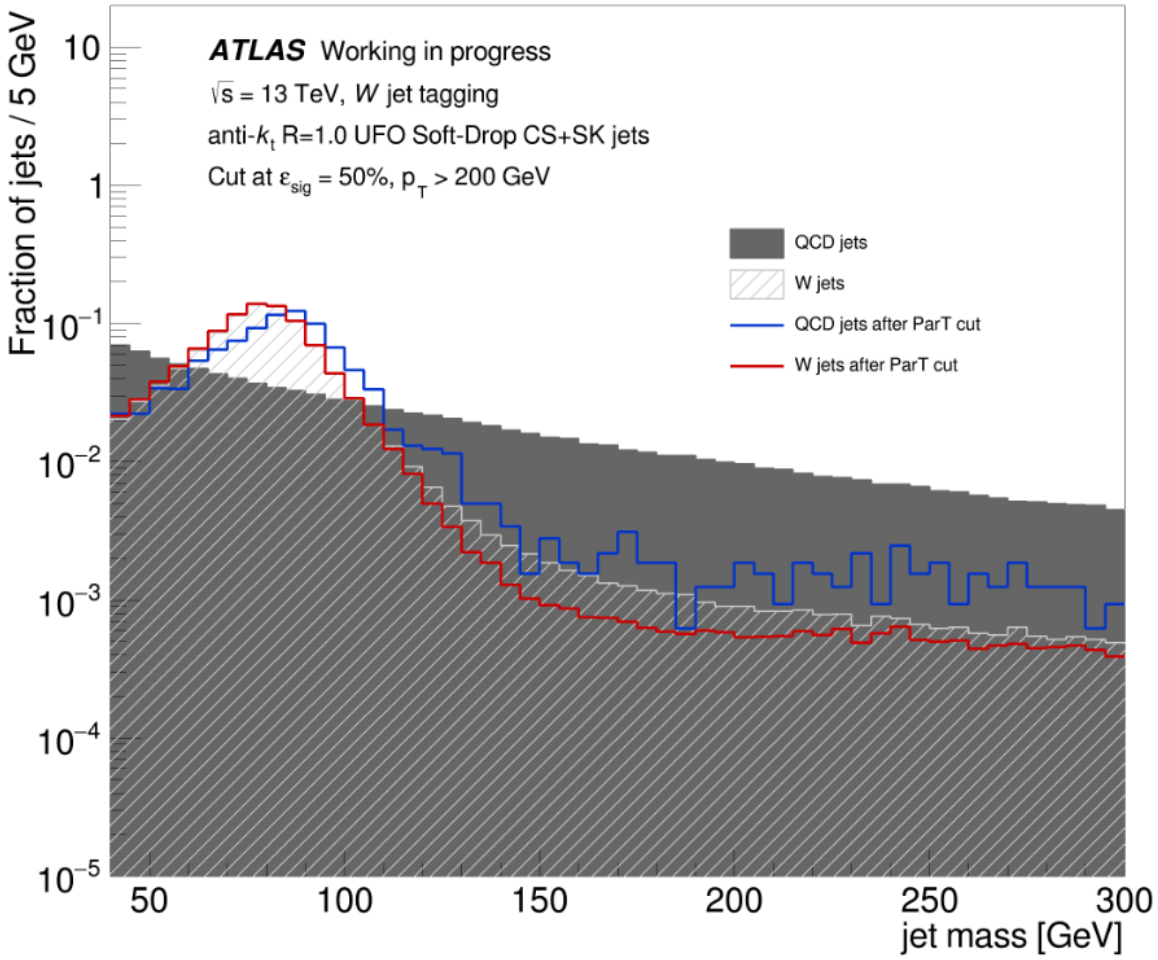
Only tested one lambda (GPU cluster is super busy…)



Higgs-V CP OO calculation using MG5

Finished code implementation, but obvious have bugs inside…