

Transformer Architectures for Quenched Jet Tagging

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In high-energy heavy-ion collisions, the unconfined state of partons known as the Quark Gluon Plasma (QGP), is known to suppress the yield of jets with respect to proton-proton collision, as well as modify the structure of jets that transverse it. Nonetheless, samples of heavy-ion jets, even at the highest centralities, will contain a significant fraction of jets that, for one reason or the other, were not significantly modified by the QGP. Our community is therefore in need of a jet by jet tagger of the quenching phenomena. Gearing towards this end, we propose the transformer architecture to tackle the problem. We have obtained excellent discrimination with respect to the current state of the art, showing that this architecture can indeed be a viable solution. Further studies should consider dealing with the underlying event and some approach close to CWoLa with jet topics, for ROC curves directly pertaining to actually quenched jets.

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