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Jet Charge Classifiers

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While there has been tremendous progress on jet classification in the last decade, classifying samples which are very similar is still an open problem. One example of this is tagging up vs. down-quark initiated jets, which historically have utilized the observable p_T weighted jet charge directly or as an input to neural networks. In this work, we explore whether this trend persists when adding jet charge to classifiers with the state of the art performance on other samples. Specifically, we modify the inputs to LorentzNet, ParT, and PELICAN, which utilize GNNs and transformers. We find two major takeaways: particle level charge or particle ID information greatly improves classification and the results are insensitive to the specific p_T weight in particle level jet charge, unlike older ones.

Track

Tagging (Classification)

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