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Identifying jets in the Lund plane

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The identification of heavy particles such as top quarks or vector bosons is one of the key issues at the Large Hadron Collider. In this talk, we introduce a novel jet tagging method which relies on graph neural networks and an efficient description of the radiation patterns within a jet to optimally disentangle signatures of boosted objects from background QCD jets. We apply this framework to a number of different benchmarks, showing improved performance for Top tagging compared to existing algorithms. We study the robustness to non-perturbative and detector effects, and show how kinematic cuts in the Lund plane can mitigate overfitting of the neural network. Finally, we compare the scaling of the performance as a function of the computational cost for several methods.

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