Séminaire LAL

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Mardi 10 septembre 2019 à 11h00

Learning from the Lund plane

Lund diagrams, a theoretical representation of the phase space within jets, have long been used in discussing parton showers and resummations. I will show that they can be created for individual jets through repeated Cambridge/Aachen declustering, providing a powerful visual representation of the radiation within any given jet. Concentrating on the primary Lund plane, I will outline some of its analytical properties, highlight its scope for constraining Monte Carlo simulations and comment on its relation with existing observables. I will then examine its use for boosted electroweak boson tagging, showing that it can provide good performance when used as input to machine learning approaches or within a log-likelihood method. Finally, I will discuss applications to the issue of jet grooming, and introduce a framework to automate the definition of a jet grooming algorithm through the use of reinforcement learning, showing how the removal of soft wide-angle partons can be optimized by the RL agent through an appropriate choice of reward function.

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