Contribution ID: **228** Type: **Oral Presentation**

QCD Correlations in Multiple Gluon Bremsstrahlung

Wednesday 3 June 2020 13:25 (20 minutes)

We compute for the first time the spectrum for emitting 1, 2, and 3 soft and collinear gluons from a hard scattering process in full QCD. This result is important because 1) all current energy loss calculations assume QED-like independent emissions of multiple gluons, which obviously misses all correlations from the non-Abelian nature of QCD, and 2) the average high-p_T parton emits ˜3 gluons as it escapes the medium. QCD correlations are therefore critical for any realistic comparison of theoretical predictions to experimental data on jets and jet substructures in heavy ion collisions. These calculations additionally provide a benchmark for jet Monte Carlo algorithms. As part of the talk, we will give a brief overview of the spinor helicity formalism, sometimes referred to as a twistor expansion or the use of maximal helicity violating (MHV) techniques, which provide the massive simplifications necessary for performing the novel derivations.

Collaboration (if applicable)

Track

New Theoretical Developments

Contribution type

Contributed Talk

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