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The High-Energy Limit of 2 to 2 Partonic Scattering Amplitudes

Thursday, 28 November 2019 17:00 (20 minutes)

Recently, there has been significant progress in computing scattering amplitudes in the high-energy limit using rapidity evolution equations. I describe the state-of-the-art and demonstrate the interplay between exponentiation of high-energy logarithms and that of infrared singularities.
The focus in this talk is the imaginary part of 2 to 2 partonic amplitudes, which can be determined by solving the BFKL equation. I demonstrate that the wavefunction is infrared finite, and that its evolution closes in the soft approximation. Within this approximation I derive a closed-form solution for the amplitude in dimensional regularization, which fixes the soft anomalous dimension to all orders at NLL accuracy.
I then turn to finite contributions of the amplitude and show that the remaining 'hard'contributions can be determined algorithmically, by iteratively solving the BFKL equation in exactly two dimensions within the class of single-valued harmonic polylogarithms.
To conclude I present numerical results and analyse large-order behaviour of the amplitude.

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