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The High-Energy Limit of $2 \to 2$ QCD scattering amplitudes

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The high-energy limit of $2 \to 2$ QCD scattering amplitudes has a rich history and recently there has been much renewed interest in the perturbative regime. In this talk, I review the salient features of this limit and present an overview of recent results. At Leading Logarithmic (LL) accuracy the partonic amplitude is governed by Regge poles in the complex angular momentum plane. Beyond LL, Regge cuts in this plane start to play an important role. First, I briefly review the Next-to-Leading Logarithmic (NLL) computations of the cuts, using BFKL evolution, which recently led to an all-order resummation of the infrared divergences of the amplitude and the determination of finite part to arbitrary orders. I then present very recent computations of the real part of the amplitude at Next-to-Next-to-Leading Logarithmic (NNLL) accuracy, using non-linear Balitsky-JIMWLK evolution, through four loops. At this logarithmic accuracy, for the first time both the Regge pole and the Regge cut contribute to the real part of the amplitude and I show how these can be systematically disentangled order-by-order in perturbation theory. Finally, I present new results for the three-loop Regge trajectory and impact factors, obtained upon comparing the Regge-limit analysis with state-of-the-art fixed-order computations in general kinematics.

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