

Two-Loop Generalized Splitting Amplitude for N=4 Super-Yang-Mills Theory

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Collinear factorization of gauge theory amplitudes is violated in the spacelike region due to the effect of long-range Coulomb interactions mediated by Glauber gluons.

We analytically calculate the spacelike collinear limit of the full color two-loop five-point amplitudes in N=4 Super-Yang-Mills theory. The result was obtained from two complementary methods. This talk will focus on the study of discontinuity of pentagon functions.

Our result explicitly shows the exponentiation of Glauber phase in the generalized splitting amplitudes. Thus we prove that factorization is restored at the level of color-summed unpolarized squared amplitudes at next-to-next-to-next-to leading order.

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