

# Helicity-dependent generalization of the JIMWLK evolution

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The small- $x$  evolution equations for the quark and gluon helicity distribution have recently been constructed by finding sub-eikonal corrections to the eikonal shock wave formalism. Those equations are written for correlators of infinite light-cone Wilson lines along with the so-called polarized Wilson lines. Those equations close in the large  $N_c$ -limit ( $N_c$  is the number of quark colors), but also in the large  $N_c$  &  $N_f$ -limit ( $N_f$  is the number of quark flavors). However, in the shock wave formalism, no closed form can be obtained for arbitrary value of  $N_c$  and  $N_f$ .

For the unpolarized case, the generalization of the Balitsky-Kovchegov equation is done by the Jalilian-Marian—Iancu—McLerran—Weigert—Leonidov—Kovner (JIMWLK) functional evolution equation. Such an approach for the small- $x$  evolution of the helicity is beneficial for numerical evaluation at finite  $N_c$  and  $N_f$  (beyond previously used limit), and for the evaluation of helicity-dependent operator with an arbitrary number of Wilson lines. We derive an analogue of the JIMWLK evolution equation for the small- $x$  evolution of helicity distributions and obtain an evolution equation for the target weight functional.

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