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Color charge correlations in the proton

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Color charge correlations in the proton at moderately small $x \sim 0.1$ are extracted from its light-cone wave function. The charge fluctuations are far from Gaussian. Correlators are described by n -body GPDs which exhibit interesting dependence on impact parameter as well as on the relative transverse momentum (or distance) of the gluon probes.

Furthermore, this analysis provides initial conditions for small- x Balitsky-Kovchegov evolution of the dipole scattering amplitude which include impact parameter and $\hat{r} \cdot \hat{b}$ dependence, and with non-zero C -odd component due to three-gluon exchange.

The color charge correlators could be measured through various exclusive processes at a high-luminosity EIC.

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