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Color charge correlations in the proton

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Color charge correlations in the proton at moderately small x 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.

This analysis provides initial conditions for small- x Balitsky-Kovchegov evolution of the dipole scattering amplitude which include impact parameter and r^*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 the EIC. They also determine unintegrated gluon distributions of the proton relevant for $\gamma - p$, $p - p$, and $p - A$ collisions.

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