

XXVIII International Workshop on Deep Inelastic Scattering and Related Subjects



Contribution ID: 34

Type: **Contributed Talk**

Color charge correlations in the proton

Tuesday, 24 March 2020 09:54 (18 minutes)

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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Session Classification: Small- x , Diffraction and Vector Mesons

Track Classification: Small- x , Diffraction and Vector Mesons