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Gluon Wigner distribution in the dressed quark model for different polarization

We study the Wigner distribution of gluon in light-front dressed quark model using the overlap of light front wave functions (LFWFs). In a dressed quark model, instead of a proton state, we assume the target state as a composite spin 1/2 state of quark dressed with a gluon. This state allows us to calculate the gluon Wigner distribution analytically in term of LFWFs using Hamiltonian perturbation theory. We present our result for different polarization configurations of the gluon in the dressed quark state. At the leading twist, one obtains 16 gluon Wigner distributions. However, we obtain 9 independent gluon Wigner distributions that can be studied. We use an improved numerical technique to remove the cutoff dependence of the Fourier transformed integral over Δ_{\perp} .

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